REMOTE COMPUTING SERVICES
MARKETS IN EUROPE

INPUT EUROPE

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1. INTRODUCTION

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I. INTRODUCTION

- This report was first published in September 1978 as part of INPUT's Market Analysis Service (MAS) in the United States. Since then its content has been updated and considerably expanded.

- This report describes Remote Computing Services (RCS) markets, particularly the Interactive and Remote Batch services markets, of the following major European countries:

  - United Kingdom
  - West Germany
  - France
  - The Netherlands
  - Belgium
  - Sweden

- Less significant country markets including Italy, Norway, Denmark, Austria, Switzerland and Luxembourg are also referred to.

- A new category of computing services has been recently added in response to the increasing trend towards distributed data processing, namely "User Site Hardware Services", sometimes referred to as "On Site Computing".

- Information contained in this report is based on INPUT EUROPE data extracted from:

  - Company Analysis and Monitoring Programme (CAMP)
  - Computer services vendor data and views in a variety of projects
  - User interviews in 1978 numbering more than 3,500.

- Comments and inquiries from clients using this report are invited.

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II. EXECUTIVE SUMMARY

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II. EXECUTIVE SUMMARY

A. MARKET OVERVIEW

- The European market is a heterogeneous mixture of unlike markets, environments, competitors, prices and practices. The only aspect that doesn't vary too widely is the user's needs, although the emerging awareness of these can occur with a two to three year delay from one country market to the next. Nevertheless, some general trends are apparent in the European market as a whole.

- In comparison, the US market is relatively homogeneous; inter-state boundaries do not have the partitioning effect that national boundaries do in Western Europe. The US market is also more than twice the size of its European counterpart - in 1977 the respective market totals for computer services revenues were $7 billion and $3 billion.

- Overall the total European market grew in value by 22% between 1977 and 1978. In the Remote Computing Services (RCS) sector, growth varied considerably between Interactive Services (25%) and Remote Batch Services (18%).

- France continued to be the largest market for computer services in total and for all but one service category. The UK market for Interactive Services is marginally larger.

- An increasing load of time critical applications is driving the expansion of the interactive market (and the development of the software related thereto).

  - Remote batch is not as attractive a user alternative and is growing at a slower rate.

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- A further development, on-site minicomputers connected to a network for off-loading peak work demands, will not change this picture from the remote batch services standpoint. Users are indicating their requirement for immediate on-line processing not the deferred processing inherent in remote batch.

- There is increasing justification for creating a third category within the RCS market: User Site Hardware Services (USHS) or the mixed use of programmable hardware for local data processing plus telecommunications access to the RCS vendor's host computer. RCS vendors market the total system, and as a bi-product move into the Turnkey Systems sector.

- Meanwhile for comparison the professional services and software products market is booming at 27% growth overall (in 1976/77), ranging as high as 32%. This is where much of the industry's new talent is being absorbed, particularly with the explosion of Turnkey minicomputers from all sources, including IBM.

- As an order-of-magnitude, the European computer services industry employs around 217,000 people, each producing, an average, $25,000 in revenues. Allowing for an average annual increase of prices of 5%, by 1982 these same people should be producing $30,000 each. By the same token there will have to be 354,000 of them, an increase of 63% over 1978 and an annual increase of staff in the industry of 13%. Actual inflation rates vary widely from country to country, and price changes will vary also from the 5% figure mentioned above.

- This is the crucial factor in all of the vendor growth plans - finding (and keeping) the right people. Already in Europe there is a shortage of good staff. Where will this extra 137,000 people come from? This is a key question for managements to address.

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- Each country in Europe must be approached with a particular subset of the basic technology, applications and know-how of the vendor, ideally developing local-need applications satisfied by locally developed packages. This cannot be stressed enough in a market where application packages do not travel well across country borders (nothing to do with language barriers). Generally, European users prefer a tailor made approach which meets their needs precisely instead of a generalised and cheaper standard system.

- For this reason, it is frequently necessary to deliberately adopt an open minded strategy regarding how a national market should be approached. The strategy should be planned with the total involvement of the national manager hired for that job. There can be clear marketing goals established as to the technology or basic products to be offered; the names and methodology of applying them, however, should be left open for local tailoring. The following paragraphs illustrate the diversity of the major country market characteristics.

- FRANCE has the largest services vendors in Europe (GSI, CISI, CAP/Sogeti for example) which have developed with outstanding aid and encouragement from government and banks. The government is also defensive in its restriction on the operations of foreign competiton. The market is progressive in adopting new trends and currently shows the most expansive intention in the direction of de-centralised computing. 75% of all business is done in the greater Paris area.

- GERMANY has the greatest number of service companies (more than 1000 of all types); no consolidation into larger units has taken place due to the absence of any harsh economic factors and the distributed geographic nature of the market. The latter factor is also responsible for the concentration of bureau business in Batch services, combined with the extremely high cost of data transmission lines. The market is IBM dominated both for the supply of in-house equipment and external computing services.

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EXHIBIT II A

MARKET SHARES HELD BY THE TOP 50 RCS VENDORS

COUNTRY	US MULTINATIONAL		EURO MULTINATIONAL		NATIONAL	
	$M	%'ge	$M	%'ge	$M	%'ge
FRANCE	49.30	25	101.82	52	25.70	13
GERMANY	34.84	31	13.11	12	48.50	43
UK	86.99	53	22.84	14	42.90	26
ITALY	27.20	59	0.00	0	13.20	29
SWEDEN	9.63	11	3.50	4	36.11	42
HOLLAND	26.97	43	0.60	1	13.95	22
DENMARK	10.60	28	2.70	7	22.38	59
BELGIUM	23.97	44	4.02	7	2.70	5
OTHERS	10.40	11	0.20	+	N/A	N/A
W. EUROPE	279.90	33	148.79	17	205.66	24

+ = SMALL VALUE

- The UNITED KINGDOM is probably the most attractive European market due to large market size, low operating costs and good availability of cost effective data transmission services. The Post Office is progressive in its development of new computer related services which include packet switching and the Prestel/Viewdata information service. These factors have assisted the present high level of development of the RCS market and will go on doing so.

- BELGIUM/LUXEMBOURG is unique in Europe for the extreme tendency by industrial and commercial organisations to contain the maximum proportion of activities in-house. Consequently it is the smallest market for computer services in Europe relative to the total amount of computing being performed.

- HOLLAND is a very competitive market due to the presence of a large number of international and some strong national vendors each directing their efforts towards a fairly limited number of prospects; most of them are located in a relatively small geographic area bounded by the cities of Amsterdam, Rotterdam and Utrecht. It is an attractive market for the RCS vendor due to the cheapness of data transmission lines, but also more generally because of the central geographic location and the open minded and international inclination of the Dutch business community.

- The multi-national vendors in 1978 (see Exhibit II.A) attracted half of the total European RCS market revenues.

- Multi-national companies are particularly strong in the UK, Belgium and France where they have more than 60% of the total revenues in those countries. Indigenous national vendor competition is much stronger in the Scandinavian countries.

- The top 50 RCS vendors in Europe are collectively responsible for 70% of total revenues.

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B. MARKET AND SERVICES DRIVING FORCES

- The foregoing analysis of market sizes and growth rates assume that the traditional structure of RCS services will continue. It is not, however, wise for market planners to continue with this assumption; instead a more open outlook should be cultivated which makes due reference to new trends in user needs and makes imaginative use of new technology and price developments.

- Recent surveys by INPUT in the major European country markets indicate that an evolution towards de-centralised computing is already in its initial phase. Conversely, the growth prospects for traditional bureau services (i.e. Batch, Remote Batch, Interactive) are changing with respect to recent industry forecasts of all-round good growth. Demand for Batch services by large organisations is now going into decline and in some countries the growth rates now forecast for Remote Batch and Interactive are falling back from previous forecasts.

- The impact of mini computers is clearly beginning to influence the users' approach to the structure and source of their computer services. De-centralisation is a trend which has been made possible by mini computers; the aspect of de-centralisation which is not yet established in the minds of users is what options are available and what form each will take. Two broad approaches being initiated currently are:

  - Distributed Data Processing (DDP)
  - User Site Hardware Services (USHS)

- Growth rates for DDP in the major European countries range from 25% to 40% annually over the next 2 years. The corresponding growth rate for centralised computing is 15% to 20%; it is probably fair to assume that some centralised growth is to support increasing distributed systems.

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- For 10 mainframes or other centralised hardware configurations in large organisations there are currently between 1 and 5 (depending on the country) distributed or dedicated computers.

- Between 20% and 18% of large organisation users who currently use conventional external services envisage the use of USHS.

- DDP and USHS are only two forms of de-centralisation currently available. Other modes of supply may be possible and there are no doubt many more variations possible on the two existing themes. As the number of services within RCS increases the boundaries between them will become less distinct. Names and labels for services will increasingly become a marketing concept.

- Services companies are becoming increasingly hardware orientated; the best example of this trend is the turnkey system which usually involves the systems or software house to be a supplier and installer of hardware. Recent acquisitions by service bureaux of software houses (e.g. BOS/Software Sciences) indicate that the Turnkey System is seen as a recovery vehicle for batch customers and a new delivery vehicle for USHS.

- A further factor in the increasing hardware orientation of services companies is the increasing dependence of hardware manufacturers on these companies for production of application software to meet users' needs. DEC does more than 75% of its business in the UK through its OEM and Discount agreements with service companies.

- IBM pursued a large number of major software houses after the announcement of S/1 to examine the prospects for co-operation. At the time the lack of discount was a discouraging factor which has since been to a certain extent relieved. Meanwhile several systems/software houses in the UK (e.g. Scicon, Logica and CAP) have installed S/1 machines in their offices for development work.

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EXHIBIT II B

EUROPEAN COMPUTER SERVICES MARKET FORECAST, 1978 - 1982

COUNTRY	1978 ($ MILLIONS)x					1982 ($ MILLIONS)+					AVERAGE ANNUAL GROWTH RATE (%) 1978 - 1982				
	RCS		Batch	Other*	Total	RCS		Batch	Other*	Total	RCS		Batch	Other*	Total
	IA**	RB**				IA**	RB**				IA**	RB**			
FRANCE	82	198	631	355	1266	194	250	1308	867	2619	24	6	20	25	20
GERMANY	28	139	505	264	936	49	235	962	340	1586	15	14	18	7	14
UK	86	102	270	248	706	210	144	506	605	1465	25	9	17	25	20
ITALY	24	35	297	194	550	30	39	576	376	1021	6	3	18	18	17
SWEDEN	34	82	240	139	495	83	120	420	339	962	25	10	15	25	18
HOLLAND	25	55	142	97	319	61	81	240	229	611	25	10	14	24	18
DENMARK	11	34	138	81	264	27	50	241	198	516	25	10	15	25	18
BELGIUM	25	37	84	61	207	59	58	163	159	439	24	12	18	27	21
OTHERS *	69	196	270	170	705	179	247	598	415	1439	27	6	22	25	20
ALL	384	878	2577	1609	5448	892	1224	5014	3528	10658	23	9	18	21	18

* Software Products, Turnkey Systems and Professional Services

** IA - Interactive, RB - Remote Batch

\+ 1982 dollars are expressed as "Constant" in that no inflation factor is applied: "Current" 1982 dollars will be higher, depending on the inflation rate, competitive environment, and product mix in each individual country.

x Captive Revenues are excluded; exchange Rates used for $1: 4.74 French Francs, 2.11 Deutsche Marks, 0.51 Pounds Sterling, 824 Lire, 4.65 Swedish Krone, 2.27 Guilders, 32.70 Belgian Francs, 5.25 Danish Krone.

- Now that the IBM 4300 has been announced there will be further increased vendor and user pressure in service companies to include the new range in their services. The types of products and services, some including hardware supply to the end user, which could be supplied by RCS vendors are:

  - Facilities Management
  - 370 Off Load to Remote User Sites
  - On Site Cluster Systems
  - Large Scale Turnkey
  - Application Software Products/Services

- The focal point of competition within the services industry is the rivalry between turnkey systems and the closest external computing service to meet the user requirement. Service bureaux have long feared the impact of the mini computer and the answers which are emerging to meet this threat are mostly based on an alternative form of supply of mini system.

C. OUTLOOK FOR THE PERIOD 1978 - 1982

- In 1977 the Western European computer services market topped $3 billion for the first time and was growing at an overall rate of 21% per annum. In 1978 the market grew at 22% to achieve a total value of $5.43 billion.

- While growth is expected to slow slightly over the 1978 - 82 period the market will nevertheless double in size reaching $7.2 billion by 1982 as shown in Exhibit II.B. The figures are in 'constant' 1978 dollars because of the widely differing inflation rates in each country. Actual growth in the period will be higher than the 18% rate shown.

- As already stated, it may become necessary during the forecast period to re-define the service elements which make up RCS. For the meantime the conventional labels are retained for convenient reference.

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- During the forecast period large organisations (greater than £20 M annual revenue) will continue to provide most of the RCS business. (For this reason many of the market figures given in this report are quoted from INPUT research in the large organisation sector of the market).

Remote Batch Services

- Of all computing services categories Remote Batch Services is the least frequently used. In most Western European countries the proportion of large organisation users ranges from 3% to 10%; only in Sweden and Norway does this proportion reach 23%. In comparison, Interactive Services are used by two to four times the number of large organisations and Batch Services two to six times the number.

- Until now the Remote Batch Services market has shown slow growth: overall, 9% per annum. This pattern is unlikely to change unless these services are developed in response to the trend towards distributed computing - thus the forecast remain static at 9%.

- In some European countries (France, Belgium and Norway excluded) Remote Batch Services are vulnerable to in-house processing. The market will be found to be more productive in the medium size organisation category and will account for 11% of the total computer services markets.

- Growth prospects will be enhanced if Remote Batch Services are developed to enable more processing to be carried out on the users site.

Interactive Services

- Users of Interactive Services form the second highest proportion of conventional external computing services usage. In market value terms, however, Interactive Services will account for 8% of the total computer services market.

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- This category of service is the fastest growing of the conventional external computing services. The average rate of growth in Western Europe will continue at the current high level of 23% per annum.

- The mainstream applications for Interactive Services are engineering, scientific and business planning computation. Some vendors are experiencing a growth in revenue of 40% to 50% per annum.

- The trend in vendor competition is towards establishment of market domains through specialisation; direct conflict between vendors is thereby reduced.

User Site Hardware Services

- To date INPUT has not conducted specific research on USHS in Europe, although overlapping user and vendor research indicates that growth potential is at least as high as for Interactive Services. (See sub-section D.).

Batch Services

- Reference must be made to Batch Services since any migration away from these will affect demand for RCS which in its USHS form offers one alternative.

- Although overall growth is 17% there is evidence that the large organisation sector of the market will grow at only half of this rate. Indeed in some countries, notably U.K., France, Holland, Sweden and Norway existing users are anticipating a decline in their demand.

- Vendors will have to work hard to generate new users for Batch Services to achieve the forecast growth rate.

- The main rivals for Batch Services is the mini computer based Turnkey Systems and USHS. These are price competitive and offer the additional attractions of increased user control and rapid turn round.

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- Constant erosion of hardware prices increases the competitive advantage of turnkey systems whereas Batch Services vendors are not experiencing any significant reductions in their operating costs, more probably the opposite.

- Batch Services which are manpower dependant and connected with special expertise included in the vendor service are less vulnerable.

D. USER SITE HARDWARE SERVICES

1. Evolution of a New Remote Computing Service

- This relatively new category of external computing service is currently establishing a foothold in the market. The proportion of users is small in large organisations and probably negligible in medium and small organisations.

- Growth prospects are at least as encouraging as for Interactive Services and in some countries exceed these by a factor of at least two (Germany, Holland and Sweden). Although this growth is on a smaller market value the incremental revenue for each new contract is much higher.

- User Site Hardware Services (USHS) are currently dedicated to a single or very restricted number of applications. Multiple or clustered configurations are as yet unheard of.

- Facilities Management could experience a renaissance if offered with User Site Services since end users will require more support than previous targets for the FM service.

- Some vendors are already acquiring software houses in order to provide the turnkey service necessary to install User Site systems. This is also an insurance against any unexpected fall off of demand for mainframe support.

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EXHIBIT II C

SELECTED USER SITE HARDWARE OFFERINGS BY RCS VENDORS

VENDOR	PRODUCT	HARDWARE	BUNDLED WITH SERVICE	PRICE RANGE	LEASE OR PURCHASE	NUMBER OF PORTS	SIZE OF MEMORY	SIZE OF DISK STORAGE
ADP NETWORK SERVICES	"ONSITE"	DEC 2020	YES	$5-15,000 PER MONTH	LEASE ONLY	8-32	1-2+ MB	45-300+ MB
NCSS	"3200"	TWO PI 3200	NO	$185,000 TO $800,000	PURCHASE ONLY	1-32	0.25- MB	200-2000 MB
ITEL*	SMALL BUSINESS STANDALONE	DG CS SERIES	YES	$15,000 TO $100,000+	LEASE AND PURCHASE	AS APPROPRIATE TO THE APPLICATION		
KEYDATA*	"UNITY" SMALL BUSINESS STANDALONE	DG NOVA 3/D	YES	$48,000 TO $100,000+	PURCHASE AND MONTHLY SOFTWARE FEE	AS APPROPRIATE TO THE APPLICATION		
GE	"MARKLINK"	TI MINI	YES	$21,230 TO $93,290 OR $800 TO $3,690 PER MONTH	LEASE AND PURCHASE	1-16	24-352	10-20
STSC	"QUAD 100"	NOT YET SELECTED	NO	$500,000 TO $1,000,000	PURCHASE ONLY	5-16	1+ MB	UN-ANNOUNCED
TYMSHARE COMPUSERVE, RAPIDATA	NOT FORMALLY ANNOUNCED	DEC 2020	UNKNOWN, BUT PRESUMED SIMILAR IN PRICE AND CAPABILITY TO ADP'S "ONSITE"					

*ARE NOT INTEGRATED WITH A NETWORK AND THEREFORE ARE NOT CONSIDERED USHS AND ARE NOT INCLUDED IN THE FORECASTS OF USHS DEVELOPED IN THIS STUDY: THEY ARE SHOWN ON THIS CHART FOR COMPARISON ONLY

INPUT

EXHIBIT II D

VENDOR PROJECTIONS OF THE PERCENTAGE OF
RCS REVENUES CONTRIBUTED BY USHS

VENDOR	PERCENT OF RCS REVENUES DERIVED FROM USHS			
	1978	1979	1980	1983
1	0%	5%	7.5%	10.0%
2	0	0	0	15-20.0
3	0	0	5.0	20.0
4	MINIMAL	10	20.0	25.0
5	MINIMAL	3	5.0	15-20.0
6	0	2	5.0	20.0
AVERAGE	< 1%	< 4%	7.0%	18.3%

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- User Site systems will be found to be a good vehicle for OEM operations. Service companies are likely to become more hardware orientated as end user demands bite.

- DDP and USHS can be seen as alternative modes of supply for the same user facility. Neither is permanently labelled 'in-house' or 'external service' territory. Essentially there is a unique opportunity to change the balance of internal computing facilities and external computer services.

2. Products and Services Available

- The vendor offerings in the USHS category are relatively limited currently. Exhibit II.C summarises the more prominent services currently offered or planned to be offered by nine vendors; all are US owned vendors of which only six are marketing USHS actively in the USA and only one (ADP) in Europe.

- In Europe USHS services and products are more likely to develop from tailor made remote systems which originate from either enhanced RJE systems or turnkey systems. Standard products will evolve subsequently. European vendors such as UCSL, Scicon and GSI (using the IBM 4300) are developing their 'On-Site Services' along these lines.

- Significant revenues from USHS will not be generated in the European market during the next three years by either the US or indigenous vendors. Exhibit II.D summarises the revenue percentage projections by US vendors in the US market. In the European market the build up is likely to be at a similar pace. (Specific research on this subject has been completed by INPUT in the USA).

E. EUROPEAN RCS VENDOR REVENUES

- Exhibit II.E shows 1978 revenues ($ millions) achieved by 16 multi-national RCS vendors in Europe. They are classified as 'multinational' because they have at least $100,000 of revenue in more than one European country.

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EXHIBIT II E

1978 RCS REVENUES – MULTI NATIONAL VENDORS
($ MILLION)

RCS VENDOR	FRANCE	GERMANY	UK	ITALY	SWEDEN	HOLLAND	DENMARK	BELGIUM	OTHER	TOTAL
IBM*	22.50	19.00	17.20	15.20	4.67	10.00	4.10	8.60	3.40	104.67
GEIS*	14.50	6.70	23.00	6.10	2.65	6.30	4.80	6.90	5.30	76.25
CISI	46.00	—	8.90	—	—	—	—	0.72	—	55.62
SLIGOS	30.50	5.00	—	—	—	—	—	3.15	—	38.65
CDC*	4.70	4.00	5.10	4.50	2.31	5.20	1.70	3.90	1.70	33.11
GSI	25.20	1.25	5.30							31.75
COMSHARE			17.00			1.10		0.86		18.96
ADP*		1.30	9.30	1.40		2.70		0.90		15.60
UCC		4.10	5.60			1.20		1.80		12.70
TYMSHARE	7.60	2.50	1.30					0.70		12.10
ATKINS-O.L.			8.25			0.25				8.50
DATEMA*		0.60			3.50	0.10	2.70		0.20	7.10
SCICON			6.60			0.10				6.70
MBP	0.12	3.10								3.22
CMG		0.16	2.04			0.5		0.16		2.86
CSC*		0.24	0.24			0.12		0.30		0.90
TOTAL	151.12	47.95	109.83	27.20	13.13	27.57	13.30	27.99	10.60	428.69
MARKET	195.0	113.00	165.00	46.00	86.00	62.00	38.00	55.00	92.00	852.00

* INPUT ESTIMATE

EXHIBIT II F

1978 RCS REVENUES – NATIONAL VENDORS

FRANCE	$M
TELSYS/SG 2	7.0
CCMC	6.5
G CAM	6.0
FRANLAB	3.8*
TELESYSTEMES	2.4
TOTAL	25.7

GERMANY	$M
DATEV	19.7
MBB	10.5
FIDUCIA	8.3*
MANNESMANN	3.9*
MKD	3.3
TAYLORIX	2.5
FIDES	0.3
TOTAL	48.5

UNITED KINGDOM	$M
BOC	19.4
UCSL	13.0
CENTREFILE	10.5
TOTAL	42.9

ITALY	$M
DATAMONT	6.5*
DATA MANAGEMENT	2.7*
GE-DA	2.2*
SEDA	1.8*
TOTAL	13.2*

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EXHIBIT II G

1978 RCS REVENUES – NATIONAL VENDORS

SWEDEN	$M
DAFA	10.4
SPADAB	9.1
KOMMUN DATA	6.36
BONNIER DATA	5.7
QZ STOCKHOLMS	4.55
TOTAL	36.11

HOLLAND	$M
CCN	3.7
ACD	3.1*
ARC	2.7
RAET	2.4
CVI	2.05
TOTAL	13.95

DENMARK	$M
KOMMUNE DATA	12.0*
DATACENTRALEN	10.3
REGNECENTRALEN	0.08
TOTAL	22.38

BELGIUM	$M
ORDA B	2.7
TOTAL	2.7

- The multi-national vendors attracted nearly half (47%) of the total European RCS market revenues.

- Multi-national companies are particularly strong in the U.K., Belgium and France; in each of these countries they have more than 60% of the total revenues in those countries.

- Conversely indigenous national vendor competition is stronger in the Scandinavian countries; here the dominance is reversed and is represented by a revenue proportion of, for example, 80% in Sweden.

- Exhibits II.F and II.G show the revenue in 1978 for RCS services by the major national vendors.

- The top 50 RCS vendors in Europe (multi-national and national) are collectively responsible for generating 70% of total market revenue.

F. STRATEGIES AND RECOMMENDATIONS

- In terms of European opportunities, only five markets are worth attention: France, Germany, and the U.K. because of their size, and Belgium and the Netherlands because of their growth and side attractions (international operations, multilingual staff available, tax facilities, etc.).

- End-user pricing considerations are a vital part of any market plan but particularly so in Europe. Typically, a paycheck in the U.K. costs $.03; in Switzerland $.25, and in Germany anywhere from $.25 to $.35. Countries that command high prices (Sweden, Germany, Switzerland) also tend to demand higher salaries, accommodation costs, telecommunications costs, etc. The main characteristics and tariffs are summarized in Exhibits II-H, II-J, II-K and II-L.

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EXHIBIT II H

COUNTRY MARKET CHARACTERISTICS

RANK	COUNTRY	RCS MARKET SIZE	END USER PRICING	ACCOMMODATION/ STAFF COSTS	COMMUNICATIONS		
					AVAIL-ABILITY	COST	QUALITY
1	UNITED KINGDOM	●	○	○	●	○	●
2	FRANCE	●	◕	◕	◕	◕	◕
3	GERMANY	◕	◕	◕	◕	◕	◕
4	SWEDEN	○	◕	◕	◕	○	◕
5	NETHERLANDS	○	◕	◕	◕	◕	◕
6	BELGIUM	○	◕	◕	◕	◕	◕
7	DENMARK	○	◕	◕	◕	◕	◕
8	LUXEMBOURG	○	◕	◕	◕	○	◕

LEGEND: ● VERY HIGH ◕ HIGH ○ MEDIUM ○ LOW

- Each country in Europe must be approached with a particular subset of the basic technology, applications and know-how of the vendor, ideally developing local-need applications satisfied by locally developed packages. This cannot be stressed enough in a market where application packages do not travel well across country borders because of differing national end-user requirements.

- For this reason, it is frequently necessary to deliberately adopt an open-minded strategy regarding how a national market should be approached. The strategy should be planned with the total involvement of the national manager hired for that job. There can be clear marketing goals established as to the technology or basic products to be offered; the names and methodology of applying them, however, should be left open for local tailoring.

- Large organisations form the best target area for RCS services since:

  - experienced and knowledgeable users are easier to sell to and work with,
  - each unit of marketing effort usually brings a higher return in business gained,
  - large scale contracts incur fewer administrative and operational overheads,
  - usage of external services (particularly Interactive Services) is more frequent in large organisations.

- A large account strategy is still a viable approach although penetration is low.

- Increased penetration is possible by addition of:

  - new categories of service,
  - industry specific application products,
  - products and services which allow the user an increased degree of computing autonomy,
  - database and network services.

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EUROPEAN DATA COMMUNICATIONS

COUNTRY	NATIONAL SERVICES TRANSMISSION RATE, (BITS/SEC) 200 600 1200 2400 4800 9600 48K 1M 2M	INTERNATIONAL CONNECTION PSTN	PAC
UNITED KINGDOM	DATEL/L DATAPLEX 3 PSS (1979)	Δ	Δ
FRANCE	PSTN/L/C ← CADUCEE TRANSPLEX TRANSMIC TRANSPAC	Δ	Δ
GERMANY	PSTN/L DATEL/Hfd WIDEBAND DATEX/IDN (1980)	Δ	Δ
SWEDEN: NORWAY	PSTN/ BASEBAND PSS 1981 DATEL	Δ Δ	
BELGIUM	PSTN/L BASEBAND PSS (1980)	Δ	Δ
LUXEMBOURG:	PSTN/L WIDEBAND	Δ	
HOLLAND	DATEL/DABAS/L IDEE (1979) DATANET 1	Δ	Δ
DENMARK:	DATEL/L PSS (1981)	Δ	
ITALY	PSTN/L BASE/WIDEBAND PSS (1981)	Δ	
AUSTRIA:	PSTN/L APDN WIDEBAND	Δ	
SWITZERLAND:	PSTN/L BASEBAND	Δ	

KEY:
- — PUBLIC TELEX, TELEGRAPH AND TELEPHONE CIRCUITS; ALSO, LEASED CIRCUITS OF THE SAME TYPE.
- — CONCENTRATED LINKS, BASEBAND AND WIDEBAND CIRCUITS GIVING ENHANCED UTILIZATION OR SPEED.
- — PACKET SWITCHING SYSTEMS.

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IN

- All are product dependant; products in this context being both tools and applications.

- Services marketing is more easily organised and usually, more effective, on a product and industry basis.

- The established pattern of providing processing services (Batch, Remote Batch and Interactive) has survived almost without change for at lease a decade; over the same period there have been many changes in the surrounding world of hardware cost-performance and user inclination. In the fast moving world of computing it would be unwise not to expect, and plan for, a new generation of computing services.

- In future generations of RCS systems, central (vendor based) and distributed hardware, distributed databases and the network resources will be jointly planned to achieve optimum balance of loads and costs. Users will have access to a hierarchical system whose operation will be transparent and will appear to be controlled and to function locally. This will change the traditional discrete service (Remote Batch, Interactive etc.) approach into a multi mode delivery, application based and user controlled service.

- In a way similar to processing services, there has been a general stagnation in the advancement of software technology. The main trend in this respect has been towards heavily increasing cost and only incremental progression in performance. Basically the gulf between user and machine has been narrowed by only a negligible extent. Design, production and implementation of software is still a labour intensive activity and the difficulties are compounded in Europe by two major factors:

  i) There is currently a shortage of good quality experienced computer staff in every European country; serious doubts must be expressed that the growth in this essential component of computer system development and installation can match the expected increase in user demand.

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EXHIBIT II K

PSTN CHARGES – EUROPEAN COMPARISONS

COUNTRY	CHARGES ($)		
	LINE[(i)] INSTALLATION	LINE[(ii)] RENTAL/YR	PEAK[(iii)] RATE/HR
UK	88	72	7
FRANCE	186	102	14
GERMANY	200	162	24
SWEDEN	79	54	5
NORWAY	196	92	13
BELGIUM	155	440	3
LUXEMBOURG	82	247	2
HOLLAND	104	136	6

(i) IF RANGE, MEAN QUOTED
(ii) 50–100 km
(iii) ALL FIGURES, NEAREST WHOLE NUMBER.

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ii) Most application areas vary considerably in terms of detailed user, legal and fiscal requirements from country to country; furthermore users have a noticeable preference for a tailor made solution in spite of the cost.

- A vital element in the strategy of RCS vendors must be in the area of recruitment and development of staff and minimisation of staff losses through good career and personnel management.

- A large slice of research and development funds should be devoted to the development of less labour intensive methods for application system implementation. This particular R & D route is littered with technical and economic failures; but the constraints on growth imposed by availability of staff make it essential that practical and cheap solutions are found.

- In terms of the conventional philosophy of data processing management the shedding of the resources and operations they control represents an erosion of their position. Considerable inertia, if not opposition, resides within internal DP organisations, and this now impedes a planned and thorough implementation of functional responsibility through the distribution of data processing activities.

- This tendency makes particular demands on vendor marketing style and methods. The two basic choices are:

  a) ignore the DP manager and sell direct to user department, or,

  b) educate the DP manager in his evolving role and develop him as a partner.

- In the longer-term, the second solution must be preferred, for two important reasons:

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EXHIBIT II L

LEASED LINE CHARGES – EUROPEAN COMPARISON

COUNTRY	CHARGES ($)[i]	
	CONNECT[ii]	LINE[iii] RENT/YR
UK	118	1868
FRANCE	186	7624
GERMANY	200	12000
SWEDEN	207	1880
NORWAY	196	2470
BELGIUM	165	3210
LUXEMBOURG	165	1640
HOLLAND	162	2837

(i) DISTANCE OF 50 km
(ii) STANDARD QUALITY/2400 bps/DUPLEX
(iii) MEAN TAKEN IF RANGE PRICES

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- the evolution of the DP manager's own career structure is tending to place him on a par with the other general managers in a company, but parity will not be fully achieved until a quid pro quo has been negotiated, namely a loosening of centralised control on a functional distributed basis in return for acceptance into the club of general management,

- the larger business DP systems cannot be implemented on a departmental basis.

- The increasing use of the database approach provides the clean interface between end-user and DP department.

  - DP department responsible for supply and upkeep of the databases,
  - User department responsible for the usage of the database resource.

- However, in the short-term direct selling is still required for specific applications and in specific situations.

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III. COUNTRY MARKETS FOR RCS

A. UNITED KINGDOM
B. FRANCE
C. WEST GERMANY
D. SWEDEN/NORWAY
E. BELGIUM/LUXEMBOURG
F. HOLLAND
G. OTHER MARKETS

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A. UNITED KINGDOM

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III - A. UNITED KINGDOM

1. MARKET CHARACTERISTICS

- The remote computing services (RCS) market is extremely well developed in the United Kingdom and growing rapidly (22% per annum). In 1978, remote computing services revenues were $188 million, of which $102 million was for remote batch services.

- Batch services was the largest component of the services market worth $270 million in 1978. The services market total of $706 million in 1978 makes the UK the third largest country market in Western Europe.

- A 1977 analysis of the largest U.K. companies showed that there is still a high number of important organizations spending upwards of $20,000 per month on EDP services, who are prepared to switch to a competitive service, providing guarantees of reliability are offered and the new service is economically justified.

- The computer services industry in the U.K. is composed of 580 active companies. Over 900 are known to the National Computer Centre (NCC) to have existed at one time or another over the last five years; many have merged or been acquired and appear under different names today.

- A large proportion of the remainder have gone out of business, showing the U.K. market now presenting the profile of a market that has achieved a measure of consolidation and maturity. With this maturity has come a period of growth in RCS, where the impact of vendor pressure as a factor in market expansion is clearly visible.

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UNITED KINGDOM VENDOR GEOGRAPHICAL DISTRIBUTION

LOCATION	SERVICE CATEGORY (%)	
	PROCESSING	CONSULTANCY AND SOFTWARE
ENGLAND		
- NORTH	8%	17%
- EAST	1	2
- MIDLANDS	11	17
- SOUTHWEST	2	5
- S.E. AND LONDON	67	54
SCOTLAND	7	3
IRELAND	3	1
WALES	1	1
TOTAL	100%	100%

SOURCE: COMPUTER USER'S YEARBOOK 1977

EXHIBIT III-A.0

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- The U.K. is the hunting ground par excellence of U.S. computer services groups wishing to acquire an operational base in the European market. ADP, On-Line Systems, and Martin Marietta have all established themselves in the U.K. via acquistion.

- Combined with the acquisition strategy of large spin-off services companies like British Oxygen and Unilever, this trend has led to the formation of large aggressive multi-service vendors in the U.K.

- The vast majority of computer services vendors (69%) are privately owned. None are quoted on the stock exchange. A similar majority of vendors are concentrated in London and the South East (See Exhibit III-A.0).

- In the last five years, the number of spin offs (or organizations who set up their EDP departments as separate entities offering computer services) has increased. As partial reflection of this trend 77% of the U.K. computer services revenue comes from the private sector, whereas only 14% comes from the public sector (4% from Central Government) and 9% from clients based outside the U.K.

- All computer services categories in the United Kingdom market show a clear growth trend overall, although the rate of growth varies substantially between bureau categories and organisation size groups. Non-users remain the majority of the total "Times 1000" population, which lends credence to the "large company-only" strategy adopted by many computer services vendors.

- Substantial business growth can therefore be sustained by accurately targeting this large company group.

- An overall view of the U.K. bureau market is one which encompasses high frequency of usage of external services (43% of the top 1500 companies) and a lower tendency to find an in-house solution (73% of the top 1500 companies have in-house installations). RCS growth potential is as good as any in Western Europe and is aided by a progressive PTT which provides cheap and good quality data transmission services.

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2. MARKET TRENDS

Remote Batch Services

- In the markets examined by INPUT'S large organisation survey, the penetration of Remote Batch Services was small indeed. Only 86 single-and multiple-source users were found.

- Users of Remote Batch Services have less of a tendency towards a decline of usage than Interactive and Batch users and a higher percentage of stable users. Large organisations will show a + 4% increase in annual demand for Remote Batch Services over the next 2 years. Better growth will be found in medium-sized companies which have large enough data volumes to justify a Remote Batch Service but insufficient justification for heavy enough internal computer processing capability; this will apply to a lower extent to demand in the small companies sector.

- Individual expenditure trends show a remarkably heterogeneous picture:

  - the Accepting Houses, Mining and other Finance group evidences a lack of interest in Remote Batch services.

  - similarly, the Insurance sector is an RB market in a state of flux with an equal number of users with a tendency towards growth as there is with a tendency towards a decline in usage.

  - all other sectors are growth markets, the best of which is the Times Top 50. The Times 51-200 is also a good growth market.

- The significance of the last point lies in the fact that the Remote Batch services growth sectors are, (with the exception of the Clearing Bank/Building Society/Finance and Discount Houses - very much the province of Centrefile at present), located in those markets where Interactive Services are strong and Batch Sevices vendors are weak.

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- Thus, it is more likely that the Remote Batch market will be seviced by Interactive vendors than by Batch vendors extending their coverage to a larger client base than at present.

- None of the major services vendors (IBM, UCC, GEISCO, COMSHARE) have established themselves strongly in the company groups examined. The market is therefore very much open to a determined thrust by vendors convinced of the inevitability of distributed processing and who can successfully package local hardware with remote processing applications know-how provided through a network.

Interactive Timesharing Services

- The contrast in usage of Interactive Services with usage of Batch and RB services is striking; it is the most heavily used external service. The distribution of the expenditure is also clearly established between the major vendors.

- The market for Interactive Timesharing services in the company groups examined shows strong growth in the Times Top 500. Growth is also good in the Times 501-1000, British Banks Overseas and Foreign Banks. In all markets, with the exception of the Times Top 500, the user base is in a state of flux with a substantial proportion planning to decrease their usage of Interactive Services.

- This "de-emphasis" on Interactive Services is most apparent in the Insurance and Accounting/Management Consultancy sectors where planned declines reached 31% and 38% respectively of respondents.

- The Interactive Services growth in the U.K. has reached 25% per annum, which cannot be sustained by the increased usage of Interactive Services by current users, (who alone account for nearly half of this growth). Thus, new users must be sought by the major vendors to keep pace with (or exceed) the rate of market growth so as to sustain or increase current market shares.

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- The large user organisation sampled expects a + 12% growth in their future requirements for Interactive Services.

- Highest growth will continue to be found in large organisations with growth at the overall market level; only modest growth is likely to be achieved with small organisations.

- The U.K. part of the survey did not (unlike all other countries covered) collect data relating to the trends in in-house distibuted or external On Site services. INPUT has no reason to believe that the trends observed elsewhere in Europe towards one of these two approaches does not apply in the U.K. The question which remains is whether users in the U.K. will opt for the in-house or the external vendor offering.

Applications Usage and Trends

- In the Industrial group there is a heavy but stagnating market for general accounting and payroll services, with only two thirds of the present users planning to make greater use of applications in this area.

- Users of Marketing/Sales Analysis and Production/Inventory applications show sustained interest in expanding their usage, but only two thirds of the population use them at present.

- Personnel Management and Financial Analysis/Planning applications are (a) used by around half of the population and (b) expected to be used more widely in the future.

- Engineering and Scientific applications have the smallest user base of all, but whose planned usage is expected to grow. This area of the market has yet to be fully exploited.

- In the Financial company group there was a lack of indentification with the applications proposed, with most respondents using specialized applications. The applications demand was weak in all areas, as was the planned future usage of these same areas.

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EXHIBIT III A.1

THE TOP TEN REMOTE COMPUTING SERVICES VENDORS
IN THE UK 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	GEISCO	0.4*	22.4*	23.0*	23.0*
2	IBM	10.8*	6.4*	17.2*	22.8*
3	(1) BOC/DATASOLVE	17.1	–	17.1	37.2
4	COMSHARE	3.2	13.8	17.0	17.0
5	(1) UCSL	8.3	2.8	11.0	18.4
6	CENTREFILE	2.0	8.5	10.5	19.1
7	ADP	+	9.3*	9.3*	9.3*
8	SIA	–	8.9*	8.9*	9.0
9	(1) ATKINS ON LINE	2.4	4.4	6.8	7.7
10	(1) SCICON	3.8	1.4	5.2	5.6

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
(1) ALL FIGURES EXCLUDE ANY CAPTIVE REVENUE
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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3. COMPETITION

- The large number of RCS suppliers already established on the market should not be considered as a deterrent to the creation of a new supplier. The rapid development of the market has more than coped with the expansion of the main vendors, so that the U.K. market is not a harshly competitive environment. Exhibit III-A.1 ranks the major RCS suppliers in order of their RCS revenues in 1978.

- A factor that is unique to the U.K. market is the degree to which ICL equipment is used for computer services. In terms of hardware share, based on the number of machines installed, ICL has a 40% penetration. In terms of revenue, however the picture is drastically different.

1977 U.K. AND ICL-BASED MARKET SIZES ($M)

MARKET	BATCH	REMOTE BATCH	INTER-ACTIVE	OTHER	TOTAL
UK TOTAL	$190.00	$75.00	$53.00	$150.00	$468.00
ICL-BASED	57.0	11.8	7.8	35.0	111.6
ICL SHARE	30%	16%	15%	24%	24%

- Due to ICL weakness in telecommunications, the RCS share is far below the Batch business. This situation is being improved, notably with the introduction of the 2900 series into the major bureaux (eight at this time). COMPUTEL has begun to generate one-third of its revenue from RCS on its ICL 2960. The largest ICL bureau, Baric, is 85% batch, however.

- IBM has nearly completed the restructuring of its Data Centre Services and Remote Computing Services (both part of IBM DP Division).

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- An aggressive growth plan is in the early stages of implementation with the super centre at Warwick, which can house as many as six IBM System/370 Model 168s tied to a network of 80 high speed lines and 10 concentrators serving the U.K. market.

- To date, only one 370/168 has gone live with the concentrators switching customers to either Warwick or the existing 370/155s in London, used for the Terminal Business Systems and Call Services. IBM continued to run batch bureaux in Croydon, Manchester, and Birmingham.

- GEISCO is one of the few suppliers to cover the entire country and whose presence is felt everywhere. GEISCO is more concerned with growth than with competition, an indication of the buoyant state of the U.K. RCS market.

- CDC provides mainly Remote Batch services. In the words of some competitors, CDC is "rarely seen" in competitive situations. The drastic pruning of the Brussels-based European headquarters has unsettled the data services group. The Call 370 service acquired from IBM has been partially merged with the Cybernet service with limited marketing success.

- COMSHARE Ltd. is the prime supplier of Interactive Services (though not the largest). Growth over 40% in 1978, came mainly from banking, government and other specialized markets where the value-added can be maximized. This specialization insulated the company from competition to a great extent.

- Centrefile is a major RCS vendor, mainly for interactive services. The company's main strength is its link with National Westminster Bank and the latter's 3,500 branches that serve as a collection/distribution and semi-marketing force for Centrefile's services. Referrals of significant new business come from this network.

  - Centrefile has the Motor Vehicle Registration (SMMT) monopoly, which is bought by all car manufacturers.

  - It also has the Law Society's time recording service license and a near-monopoly of the building society business.

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EXHIBIT III A.2

RCS MARKET SHARES OF MAIN UNITED KINGDOM FIRMS

COMPANY	SHARE OF RCS MARKET (%)	
	INTERACTIVE	REMOTE BATCH
GEISCO	26.0	0.4
IBM	7.4	10.8
BOC/DATASOLVE	–	17.1
COMSHARE	16.0	3.2
UCSL	3.3	8.3
CENTREFILE	9.9	2.0
ADP	10.8	+
SIA	10.3	–
ATKINS ON-LINE	5.1	2.4
SCICON	1.6	3.7

* INPUT ESTIMATE
+ SMALL VALUE

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- ADP's main RCS strength in Europe lies currently in the U.K. and Holland through the former Time Sharing Ltd. and Cyphernetics operations, respectively. The combination is currently trading as ADP Network Services International.

- Atkins On-Line has become a significant supplier of Interactive Services, largely based on OLIVER, a problem-solving language, which produced over $1 million in 1977. APL, Financial Planning and Engineering services provided the remainder of the $4.1 million of Interactive Services. The Atkins group, formerly the parent before the On-Line acquisition, provided $780,000 in revenues.

4. VENDOR MARKET SHARES

- The estimated market shares for 1977 revenue for each of the major competitors in the U.K. RCS market are shown in Exhibit III-A.2.

- The main competition in the U.K. RCS field is between IBM, BOC, GEISCO and COMSHARE. The latter two companies have, in some cases, identical software (e.g., SDRC) such that any improvements in running efficiency result in lower costs to the client base (which can easily change from one supplier to the other). IBM, meanwhile, is restructuring its previously batch processing decentralized centres, bringing them all on-line with a new supercenter in the Midlands.

5. PRICING

- In the U.K. RCS market, pricing tends to be set by GEISCO who prices its services at a premium to the other suppliers in the market.

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- Until recently, market price changes have followed a pattern. GEISCO modifies its prices, followed one month later by COMSHARE, and by ADP Network Services six months later. IBM has not had appreciable influence to date.

- In 1977 this pattern was broken. GEISCO (then Honeywell) raised its prices, but its closest rival, COMSHARE, did not. ADP also kept prices unchanged.

- Competitor's evaluation of each other's pricing usually carried out by buying time on each other's systems and running company benchmarks.

- The market is very price sensitive and, as a result, the vendors tend to move in parallel.

6. DATA COMMUNICATIONS

Services Provided

- The main data transmission service offered by the Post Office is Datel. The service is offered over the public switched telephone network (PSTN) and private circuits (leased lines); maintenance of any necessary modems and ancillary control equipment is also available to interface customers' data terminal equipment to Post Office circuits. Transmission rates vary from 200 bits/sec to 50K bits/sec; the latter speed is provided over specially engineered circuits giving a full duplex facility.

- For computer bureaux and other organisations which need to link a larger number of customers via a common line to his facility, the Post Office provides Dataplex 3. This service comprises two multiplexers interconnected via modems to a private common circuit; customers access the remote multiplexer using private circuits or PSTN. Lower costs are thereby achieved since the common line is being shared and the local multiplexer is being accessed at local call charges.

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- The Post Office has been experimenting with packet switching and has been operating an Experimental Packet Switched Service (EPSS) since April 1977. The service has been available between 0845 hours and 1645 hours on weekdays; a network availability of 99% has been achieved during these hours. It is planned to introduce a public Packet Switching Service (PSS) during the latter part of 1979; this will meet international standards CCITT x 25, x 3, x 28 and x 29. EPSS will be maintained for a reasonable overlap period.

- International data transmission is provided through the following services:

  - Datel for use on PSTN providing speeds ranging from 50 bits/sec to 2400 bits/sec. Connection with most European countries and the USA and Canada is available.

  - Leased circuits using telephone or telegraph type circuits are available providing speeds up to 1200 bits/sec. For higher speeds telephone circuits can be grouped and provide up to 50K bits/sec; between the UK and the USA up to 50K bits/sec can be provided using single channel per carrier facilities. The transmission is digital in the space link but it is necessary to change to analogue techniques for the terrestrial links.

  - For connection with Canada a point to point facility is available between the UK and the Montreal International Gateway: Speeds ranging from 50 bits/sec to 2400 bits/sec are available on full duplex operation.

  - An International Packet Switched Service (IPSS) is planned, initially between the UK and the USA. The first host-to-host link has been set up between the London and Boston IPSS gateway nodes. The link operates at 2400 bits/sec and is accessed in the UK from the Post Office R & D centre at Bedford.

  - Euronet is due to be available to UK users in late 1979; access will be gained to this information network through a packet switching exchange in London. Speeds up to 96K bits/sec will be available.

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EXHIBIT III A.3

PSTN CHARGES IN THE UNITED KINGDOM

a) CONNECTION CHARGES

- INSTALLATION OF A NEW LINE WITHIN 5 km OF AN EXCHANGE WHERE EXTERNAL WIRING REQUIRED – £45
- ANNUAL LINE RENTAL – £36 to £39

b) TRAFFIC CHARGES

DISTANCE (km)	CHARGE/HR (£)		
	PEAK	STANDARD	CHEAP
LOCAL	0.90	0.60	0.15
< 56 km	3.60	2.40	0.60
> 56 km	10.80	7.20	1.80

NOTES i) PEAK RATE – MON TO FRI, 0900–1300

ii) STANDARD RATE – MON TO FRI, 0800–0900, 1300–1800

iii) LOCAL CALLS VARY IN RADIUS

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EXHIBIT III A.4

UNITED KINGDOM LEASED LINE CHARGES

DISTANCE (km)	CONNECTION CHARGE (£)		ANNUAL RENTAL (£)	
	S1/S2/S3	T	S3	T
< 0.8	15	20	32–74	34–85
0.8–16	25	40	85–405	103–445
16–80	35	60	600–1185	610–1295
80–160	55	90	1280–1815	1440–2055
> 160	75	120	2210–3620	2410–3890

NOTE: i) S1, S2, S3 AND T ARE LINE QUALITY INDICATORS

ii) S3 IS USUALLY 4 WIRE; T IS ALWAYS 4 WIRE

ii) S3 CAN CARRY UP TO 1200 BITS/SEC

iv) T IS REQUIRED FOR MORE THAN 2400 BITS/SEC

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Tariffs

- While Public Switched Telephone Network (PSTN) lines are relatively costly, leased lines are very cheap and of good quality. (See Exhibits IIK and IIL).

- U.K. networks using PSTN lines have a critical cost breakpoint at 56 kilometres above which line costs are tripled. (See Exhibit III-A.3).

- Leased T quality circuit connection charges are from 33% (short distance) to 60% (long distance) more expensive that S3 charges. The circuits themselves are from 2% to 20% more expensive than S3 circuits. (See Exhibit III-A.4).

- Average delay for obtaining leased line installation is three to four months.

- The post office announced in 1978 a ten year plan to increase telephone penetration from today's 45% (telephone per person) to 80%. Neither Sweden nor the U.S., who have the highest penetrations rates (70-75%), attain that rate today.

- The U.K. Post Office telecommunications group has the largest budget among the Western European telecommunications authorities, spending nearly $2 billion a year (or $5.6 million a day) on improvements and network extensions. Its electronic exchange (System X) now under development will nevertheless arrive later that the Swedish, German, and French equivalents.

7. RECOMMENDATIONS

- The U.K. offers strong attractions to a prospective vendor of remote computing services with a very strong market demand for such services (both interactive and remote batch with greater demand for interactive).

- Financial services, in the broad sense, absorb the largest proportion of the RCS market.

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- Telephone communications within the U.K., while not on a par with the U.S. or Germany, are adequate; line quality is good and costs are reasonable.

- Market education as to what benefits can be achieved from RCS has been largely achieved at the large U.K. company level. Marketing needs to convince prospects of the economic value of the service, rather than explain what RCS is. At the establishment level, however, there is a penchant for the small in-house system.

- A minor, but by no means negligible, factor is that U.K. nationals rarely speak any foreign languages. This is a serious drawback in negotiating business on the continent.

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B. FRANCE

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III - B. FRANCE

1. MARKET CHARACTERISTICS

- France is the largest European computer services market, but in contrast to the distributed nature of its competitor, Germany, 75% of all business done on the French market is done in the greater Paris area (Paris and its "banlieue"). This has led to the development of a group of very large computer services companies (in European terms).

- With nearly 700 vendors in the market, competition is very keen. But more importantly, the French market is influenced by the "old boys" network in effect, whereby who you know in business circles is almost as important as what you know about the business in question. This is particularly true of the banking, government, and para-public sectors.

- Thus, the two largest computer services vendors in France, CISI/SIA, which is 100% owned by CEA (Government Atomic Energy Commission) and CAP/GEMINI/SOGETI (the largest European software company, owned 34% by CISI/SIA) swear they are competitors and operate at arm's length, while simultaneously holding regular joint planning meetings.

- This combination of government (CEA), Batch, Remote Batch, and Interactive Services (from CISI/SIA), and professional services and software products (from CAP/GEMINI/SOGETI), has been extremely effective. They jointly captured revenues equivalent to 23% of the French market in 1977 (22% of this revenue came from foreign markets, however).

- In spite of the strength of French vendors, the French government has decided to reject applications by US owned RCS companies to set up in the French market. This results from their view that indigenous vendors are still not strong enough to withstand competition from such companies as GEIS and IBM.

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- Excluding the equipment manufacturers who offer services, nearly 60% by number of the vendors in France are limited companies (Societes Anonymes) with a further 28% established as limited partnerships (Societes a responsibilite limitee).

- The French market is characterized by strength in two major submarkets : RCS and software products (SP). The latter has rapidly developed into the largest software products country market in Europe, with Paris headquartering many foreign (and U.S.) software products vendors.

- The French RCS market was worth $280M in 1978 (INPUT estimate). Over the next four years (1979-1982 inclusive) the annual growth rates for Interactive and Remote Batch Services will be 24% and 6%.

- Batch Services account for half of the total computer services market (including software, training, etc) and was worth $631M in 1978 (INPUT estimate). The annual growth rate over the next four years is expected to be 20%.

- French PSN line costs are quite competitive and compare favourably with the European average. The quality of the lines does not compare well, however, nor does the average delay in obtaining lines (although this has vastly improved, halving in the last two years to today's average of ten weeks).

- PSN connection costs are very high at the short distance end and also entail a monthly rental. As the distance grows to 150km or more, the charge becomes more comparable to other major European countries.

- Leased lines are the second most expensive in Europe and by such a margin that one wonders how they can be justified in the eyes of the PTT, let alone the users.

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2. MARKET TRENDS

- Batch Services users show a marked tendency in the Top 1500 companies towards stabilisation with 52% of the current user base expecting no growth in their usage and 24% a decline. On the other hand, both Remote Computing Services markets show good growth demand from current users.

- In overall percentage terms demand for Batch Services will decline in large organisations at -12% annually over the next 2 years. The industry sectors chiefly responsible for this trend are the Paper/Printing/Publishing and Chemical/Petroleum/Coal/Rubber sectors.

- Community Services and Administration is the only strong sector for Batch Services in the Top 1500 companies.

- The Remote Batch Services market in France is obviously far from being substantially developed and at present does not warrant a great deal of attention. Some notable Batch Services market suppliers have made an attempt to transfer their Batch revenues to a Remote Computing network, but have not succeeded in achieving anything more than remote data capture.

- Remote Batch Services users generally expect growth ; however, they represent only 13% of the 318 users interviewed. Within this small RB population, 58% expect growth, and 11% a decline in usage equivalent to a growth in large organisation demand of +13%.

- The Remote Batch Services market grew by 8% in 1977. It should not be difficult to increase this to 13% over the next 2 years. The implementation of on-site hardware in the form of minicomputers used as nodes of the network should enhance this from 1979 onwards.

- Of these, the vast majority of Interactive users expect to see good growth in their present usage although those who quantified this view could only put a +10% figure on this trend.

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- Very few of those presently using Interactive Services expect a decline in usage or even a stable usage. As with Remote Batch Services, however, the greatest source of growth in Interactive Services has to be the non-user.

- Excluding the extremes in the sample (100% growth from a user in Wood Products and zero growth from two users in the Construction sector), the top four sectors for Interactive are :

  - Petro Chemical/Coal/Rubber etc
  - Food/Drink/Tobacco
  - Basic metal Industries
  - Metal Products/Mechanical/Engineering

- In addition the Community Services/Administration group show a high level of usage, although with mixed intentions from the current users.

Applications Usage and Trends

- The two main groups of (i) industrial companies (ii) financial organisations, were examined for their present and future usage of their main applications, and the type of processing-internal computer, external services and combined (minicomputer both as internal computer and used as a node to a services network).

- In the industrial group, there is a strong market for General Accounting/Payroll on internal computers and, relatively speaking, on bureau services also. Marketing/Sales is a rapidly expanding market, rising to the level of Production/Inventory, and Personnel processing, both of which are second level applications with 60+% usage each.

- Relatively, the use of in-house minicomputers for bureau service data transmission/connection is growing with an across-the-board interest for such on site services in all application areas. Stated in other terms the use of on site services is attractive, independent of the type of application in use.

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- In the financial companies, the contrast of bureau services-based applications is striking, in comparison with the industrial group. General Accounting/Payroll is a popular application for outside services (three times stronger than all the others). It is also the strongest growth area by a factor of almost two to one.

- There are very few areas of decline in either industrial or financial companies, but a growing proportion of stagnation in usage of Personnel and General Accounting/Payroll.

3. COMPETITION

- The French RCS market was worth $240 million in 1977, of which $173 million was in remote batch services. IBM had an estimated 17% of this market, slightly ahead of CISI/SIA. The latter does 70% of its business with public sector clients such as the CEA, EDF (Electricity Co) and BMP (Banque Nationale de Paris, i.e., national bank).

- GSI's revenue is the consolidation of all of its holdings in DATEL (Germany), CRC (UK), and GSI-Europe (which includes GSI-Switzerland, mainly composed of the former SISCO operations and EAD, an Italian subsidiary). The analysis of remote batch revenue is, therefore, misleading at the holding company level, and merely serves to indicate the size of the GSI operations, not its French market share (or competitiveness in that market).

- HB-NIS, in France, has a policy of pursuing only large/very large companies, much of which is "fall-out" from their large 66 series system equipment marketing/sales activities.

- G-CAM does 75% of its business with Caisse de Depots, of which it is a subsidiary. The main operational entities are Artemis, Sinorg, and IMI. Sinorg aims almost exclusively at the African and Middle East markets. In summary, G-CAM, despite its size, cannot be counted as serious competition on the open market.

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EXHIBIT III B.1

THE TOP TEN REMOTE COMPUTING SERVICES VENDORS
IN FRANCE 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	CISI	41.4	4.6	46.0	110.0
2	SLIGOS	20.0*	10.5*	30.5	59.7
3	GSI	23.2	2.0	25.2	99.5
4	IBM	15.1*	7.4*	22.5*	52.6*
5	GEIS	+	14.5*	14.5*	14.5*
6	CEGI TYMSHARE	0.5*	7.1*	7.6	7.6
7	SG2/TELSYS	4.0	3.0	7.0	71.9
8	CCMC	6.5	–	6.5	39.7
9	G-CAM	6.0	–	6.0	12.4
10	TELESYSTEMES	1.7*	0.7*	2.4	18.5

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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- Cegi-Tymshare is owned 51% by Credit-Lyonnais and first becam profitable in 1974. Since then its presence on the interactive market has grown considerably and it is now the undisputed second largest interactive vendor in France.

- Among the remainder, SLIGOS and CDC are the most important open-market competitors. Telesystemes is for all practical purposes a PTT subsidiary, and offers interactive, remote batch, and what is almost a value added network: "Transplex". CCMC is largely batch-oriented but is expanding its remote batch operations. It served over 30,000 clients in 1976 for accounting applications brought in by its CPA owners.

- Finally, NATEL, a 90% owned subsidiary of BNP, is the resut of adding Honeywell Bull services (20 computer centers) to a group of data entry centers (Saisinfor, Perinfor) and Natio-Services (created in September 1971). In 1973, five other gorups were added (CAM, CELORAM, CERTI, SPINATIC, and STAMIC). The result was chaos. To add to the confusion, the Philips data centres were added in 1974. The conglomerate thus achieved, has taken three years to reorganize and is still not profitable - a factor which perhaps led to acquisition by GSI in 1979.

- The principal vendors and their ranking by sales is given in Exhibit III-B.1.

4. VENDOR MARKET SHARES

- The exclusion of captive revenues makes the vendor shares in the French market somewhat lower in many cases than their total revenues would suggest.

- Sixty per cent of CISI's revenue is captive; thus in total RCS revenue they have the largest share, but, after subtraction of captive revenue they have the fourth largest.

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EXHIBIT III B.2

RCS MARKET SHARES OF MAIN FRENCH FIRMS

COMPANY	SHARE OF RCS MARKET (%)	
	INTERACTIVE	REMOTE BATCH
CISI	5.6	20.9
SLIGOS	12.8	10.1
GSI	2.4	11.7
IBM	9.0	7.6
GEIS	17.7	+
CEGI-TYMSHARE	8.7	0.3
SG 2/TELSYS	3.7	2.0
CCMC	+	3.3
G-CAM	+	3.0
TELESYSTEMES	0.9	0.9

* INPUT ESTIMATE
+ SMALL VALUE

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- IBM, CEGI/Tymshare, SG2/Telsys, CCMC and G/CAM all have significant proportions of captive revenue. Exhibit III-B.2 represents the net market shares held by the leading RCS vendors.

- In the cases of CISI and GSI, market shares are slightly overstated due to export revenues.

5. PRICING

- During 1979, INPUT carried out a series of benchmarks of major computer services vendors in France using basic function packages such as compilers and sorts. From the outset it should be realised that such benchmarks provide a partial view only of the French market pricing structure.

- The absence of any computer services industry leader with a dominant position, (equivalent to IBM in the computer equipment industry), means that there are no pricing standards by which to judge the "market level" of a given user service.

- Basically, vendors charge what they want, within reason, for non-standard (or specific) applications. Only in machine time sales is there a semblance of the "going rate" (e.g. for an hour of machine time).

- Whereas for specific applications the variance is towards how high the vendor can raise charges before disturbing the client, raw time sales tend to be an area of highly competitive discounting of machine time that has been amortized on other activities.

- However, some vendors refuse to enter into price cutting for activities they are not interested in. GSI, for example, has no interest in time sales, (such as for the benchmarks that were run) and was not very concerned about the level of price charged by others for the same job. As a result, some of the GSI prices are very high, which is not a true reflection of GSI's competitiveness in the French computer services market.

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- In France, pricing for Computer Services has little to do with performance. In general, bureaux charge widely varying prices for identical services, with little to fear from customer back-lash.

- Thus Computer Services vendors, as a rule, charge customers at a level compatible with their status in the market. The more important the status the higher the price that can be charged. This is evidenced by the appearance of the GSI, IBM, CISI group near the top of all price comparisons; prices quoted varied by as much as 4.6 to 1 for Fortran compilation between the highest and lowest prices.

- It is a matter of company policy as to when pricing changes occur for a given service but it is probable that a 10%-15% increase could be made, without any noticeable impace on the customer base.

- There are some interesting anomalies that were raised by the benchmarks, not least of which is the realisation that prices can vary, for an identical job, despite the fact that the same model/make of machine, version of operating system, version of assembler etc are used.

- The principles of pricing and discounting vary very considerably from one supplier to another although most of the IBM-based vendors use the same basic method to determine a basic "Unit of Charge". However once a unit of charge has been derived, different rates are applied for:

  - different machines
  - different levels of daytime/nightime priority of turnaround.

- Not all bureaux operate a variable charging system. Telsys and Franlab, for example, have one basic rate of charge regardless of what turnaround constraints exist. For those companies which modulate the tariff according to priority, the tariff increases by a factor of up to 2 with respect to the normal rate.

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- Discounting information is extremely difficult to obtain in view of the commercial significance attached to such information. Most firms do not give hard information before discussing service needs in considerable detail and like to operate on a customer by customer basis. However, discounts for business volumes in excess of 1MF of sales per annum can be between 20 and 40 percent.

6. DATA COMMUNICATIONS

Services Provided

- Conventional circuit switched data transmission is provided entirely on the publicly available lines; no leased lines for exclusive use are available.

  - For speeds up to 2400 bits/sec the Public Switched Telephone Network is used; the quality cannot be consistently guaranteed due to the variety of equipment which services that network and the variety of routes which may be selected. All subscriber installations consist of a telephone to establish communication.

  - For speeds between 2400 bits/sec and 9600 bits/sec the Caducee service is available; this is a specially engineered network offering a higher quality service and is provide specifically for data transmission.

  - Telex circuits are an alternative to the PSTN for very low speeds; the cost of transmission at 300 bits/sec for distances over 200 km and between 100 and 200 km for long datastreams favour the Telex service.

- For more intensive users and those with multi-point data transmission require ments two network based services are available. The networks consist of multiplexors connected by special high grade links. Users are connected to the nearest node of the network by the PSTN, leased line or the network can be extended to place a multiplexor on the user's site; the type of connection depends on the service selected:

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- The Transplex service is provided for speeds up to 1200 bits/sec and operates in asynchronous duplex mode. Connections on the terminal side can be made through PSTN or a leased line; on the computer side, the connection can be made by leased line to the nearest network node, or, the network can be extended to place a nodal multiplexor in the computer installation.

- The Transmic service is a high speed service reserved for data transmission. Speeds ranging between 2400 bits/sec and 2M bits/sec are available operating in duplex synchronous mode. Connections with the network are made through special very high speed links or on-site multiplexors.

- The French have been at the forefront of European development of packet switching networks, particularly with the prototype RCP and CIGALE networks. These are the forerunners from which the present TRANSPAC public network is derived. The service is yet to be fully implemented to provide access from all parts of the country. Transmission speeds range from 50 to 4800 bits/sec. Connections with the nearest access node can be made through Telex, PSTN or leased circuits; the virtual circuits in the network can be automatically switched according to network load or on a permanently fixed path between two points.

- International data transmission connections are available through three types of service:

  - The Datel services, provided in partnership with the British Post Office, are available to connect with most European countries and the USA and Canada. The speeds available range from 50 bits/sec to 2400 bits/sec.

  - An access service, called DBS, is available to US subscribers to Tymnet and Telenet. Currently a transmission speed of 300 bits/sec is allowed.

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EXHIBIT III B.3

PSTN CHARGES IN FRANCE

a) CONNECTION CHARGES

- ANNUAL RENTAL FOR CONNECTION TO PSTN – 378 FF to 504 FF

b) TRAFFIC CHARGES

DISTANCE (km)	CHARGE (FF)
< 10	0.42/CALL
10-25	21.0
25-50	33.6
50-100	63.0
100-200	100.8
> 200	126.0

NOTE: i) A REDUCTION OF 50% IS APPLIED OUTSIDE PEAK HOURS

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EXHIBIT III B.4

LEASED LINE CHARGES IN FRANCE

DISTANCE (km)	ANNUAL RENTAL ('000 FF)		
	2 WIRE	4 WIRE QN	4 WIRE QS
1	2.06	4.07	6.68
5	3.73	7.46	8.21
10	5.85	11.69	12.86
20	10.08	18.75	20.62
30	12.90	25.80	28.39
50	19.96	32.86	36.85
⩾ 250	85.68	98.58	115.72

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- The Sesame service provides the option to users of building up a private message switching network. The system offers speeds ranging from 50 to 1200 bits/sec.

Tariffs

- French PSTN line costs are expensive compared with the European average, as shown in Exhibit III-B.3. The quality of the lines does not compare well, however, nor does the average delay in obtaining lines (although this has vastly improved, halving in the last two years to today's average of ten weeks).

- PSTN connection costs are very high at the short distance end and also entail a monthly rental. As the distance grows to 150km or more, the charge becomes more comparable to other major European countries.

- Leased lines are the second most expensive in Europe (see Exhibit III-B.4) and by such a margin that one wonders how they can be justified in the eyes of the PTT, let alone the users.

- When the same company uses both ends of the leased line (i.e., when the leased line is used for intercompany or intra-subsidiary communications) a 20% reduction is applied. The formulae used is directly dependent on straight line distance, such that there is a continuous variation of tariff between the tariff zones (kilometres 1, 2, 10, 20, 30, 50, 100, 200, 250, 300 and 311).

- At the top end (311km) the French tariff is more expensive than even the German tariff. Fortunately, most RCS business is done in and around Paris; where communications are necessary between Paris and Marseille there are alternatives, the most important of which is Transplex.

- Transplex (from Telesystemes) is practically a value added network which offers a data highway between Paris and Marseille with network collection points in all of the major cities in the North, West, Southwest, and South. The tariff is some 25-30% cheaper for equivalent or better services than those of the PTT. Yet Telesystemes is owned by France Cables, which is owned by the PTT.

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7. RECOMMENDATIONS

- France is the prime RCS market in Europe and as such merits attention despite the difficulties facing a U.S. entrant. Establishing a Paris headquarters is no easy task. Buying into the market via the acquisition of an established French company is far more effective.

- The French like to deal at the highest levels (President, Vice President) of an organization, and with Frenchmen. Better still, if these same people are personal friends, the business opportunities are far greater. One step down from this is the "school tie" syndrome where alumni of say, l'Ecole Polytechniques or HEC, etc., even though perfect strangers, will prefer to deal with each other rather than with someone from another school.

- In this environment, establishing a Paris office staffed by foreigners is commercial suicide. An optional approach is that taken by McAUTO, Tymshare, and others who jointly funded, with an established well-known French company of similar nature to themselves, the development of existing operations.

- French nationals are nearly as insular as their U.K. counterparts. (The foreign language abiity of the average Frenchman usually limites him to France and Belgium).

- RCS competition is very strong in France, but the market is expanding rapidly enough to accommodate further vendors, particularly in financial applications for which there is an increasing demand.

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C. WEST GERMANY

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III - C. GERMANY

1. MARKET CHARACTERISTICS

- There are nearly 1,000 computer services companies in West Germany. The stable nature of the German economy over the past eight to ten years has done little to force consolidation. Add to this the distributed nature of the business community served, and there emerges the picture of a market spread relatively evenly over seven major regions :

  - Stuttgart
  - Hamburg/Bremen*
  - Hannover/Bremen*
  - Frankfurt
  - Munich
  - Ruhr-Gebiet (Dortmund, Essen, Cologne, Dusseldorf, Duisberg)
  - Berlin

  * Bremen near enough to both to be served by either.

- Each major town within these areas is served by a large variety of batch bureaux, each with its own speciality and near enough to the local clientele to allow fast turnaround. Germany's communications costs are the highest in Europe and do not encourage the development of RCS.

- For all of these reasons, there are few very large German computer services vendors. Despite the fact that Germany is the largest market in Europe, there are few sizeable and easily attainable market areas that are not divided between a multiplicity of small companies, all operating locally.

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- The structure of the market, therefore, is that of a few large companies (DATEV, FIDUCIA, Mannesman, MBB, Taylorix, IBM) followed by several medium-sized companies (AC-Service, MKD, DVO, GEIS, etc.) followed by innumerable very small local operations (most of which are privately held).

- For the geographic reasons already given, the German market is batch orientated. In 1978 the market for Batch Services was worth $505M (INPUT estimate); this market will grow at an annual rate of 18% over the period 1978-1982.

- The market for RCS is relatively undeveloped, being worth in 1978 $167; this market is expected to grow at an annual rate of 15% in the case of Interactive Services and 14% in the case of Remote Batch.

- The quality of the German PTT network services is the best in Western Europe and is continually being improved. Quality is expressed as measuring the reliability of the lines provided, speed of support for installation modification, line capacity available for expansion and short delay in obtaining it.

- It is estimated that the German public network is, on average, never loaded beyond 80% capacity. The importance, to a businessman, of this feeling of "communicability" cannot be overstressed.

- Unfortunately, this very high quality and availability of German communications has a stiff price. PSN line costs are up to two and one half times the cost of the peak rate for equivalent lines in the UK.

- Germany has the lowest usage by large organisations in Europe of external computing services ; conversely this country has the highest usage of in-house installations.

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2. MARKET TRENDS

- The prospects for conventional external services are relatively poor compared with the prospects for the in-house and external service interpretations of de-centralised computing.

- BATCH SERVICES will overall tend to stagnate although there are distinct differences in the trends at either end of the expenditure range. Large organisations will show a modest growth of + 4% whereas growth rates improve towards the small end of the size spectrum, with small organisations anticipating a + 20% growth.

- REMOTE BATCH SERVICES is a less attractive large organisation market than Batch Services. The areas of best potential to target are the medium and small size organisations which will show growth of + 15% and + 20% respectively.

- On the basis of individual growth rate, INTERACTIVE is probably the only service which can continue to stand alone with good growth (15%) and relatively little erosion, since it is already a de-centralised computer service (i.e. controlled by the user not the data processing department). The best prospects for future growth in large organisations will be found in the next 2 years in :

  - Food/Drink*
  - Paper/Printing
  - Chemicals/Petroleum
  - Fabricated Metal*
  - Business Services

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- The industries asterisked (*) in the above list are also those which offer the best growth prospects for On Site services which will grow at 10% per annum. (The Non-Metallic products industry is also a good growth prospect). A two pronged marketing drive for both interactive and On Site services as complimentary services in these industries would give the best return for marketing investment.

- In no other country is the Interactive user proportion so close to the proportion of Batch (the largest in all cases).

Application Usage and Trends

- The most significant observation on application areas is that there is a mild, and, in some cases a strong trend towards On Site Services over the next 2 years. The trend is strongest in large organisations in the Food/Drink, Non Metallic and Fabricated Metal manufacturing industries ; the application areas which are particularly affected by this trend are:

  - General Accounting/Payroll
  - Financial Analysis/Planning
  - Production/Inventory Control

- In all application areas (excepting Portfolio Management) conventional bureau services as the source of supply will decrease ; clearly some, or all of this reduction will be absorbed by the trend towards On Site Services. Indeed the most frequent use of bureau services is currently in those application areas (as above) which are the best growth prospects for On Site Services.

- In terms of overall computerisation regardless of source, the application areas which are currently, and, will be over the next 2 years, the most frequently computerised are :

  - General Accounting/Payroll
  - Financial Analysis/Planning
  - Production/Inventory Control

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- The application areas which offer the best growth prospects for all external services (including On Site) are :

  - General Accounting/Payroll
  - Financial Analysis/Planning
  - Production/Inventory Control

  The latter two are subject to less variation to meet the needs of different European countries and thus represent the better investment potential.

3. COMPETITION

- The size of the German RCS market is a reflection of its development, not its potential. This is amptly demonstrated, in microcosm, by DATEV, which is owned by, and operated for, some 1,500 tax consultants. Programs, terminals, central hardware and operational procedures are all standardized and the business in thriving. Yet the vast majority of Datev's revenue ($43.8 million in 1977 and $56.2 million in 1978) comes from batch processing on its two IBM System/370 Model 168s. DATEV has 730 employees.

- Similarly, FIDUCIA is owned by the 342 mutual loan associations (Volksbanken) who use its services, again mostely on a batch basis, with just a third of its $23 million in 1978 achieved through remote batch.

- Remote batch processing absorbed $139 million of the total RCS market of $167 million in 1978. Of this remote batch market, Datev took the largest share ($14.2%).

- IBM covers the entire German market with 13 computer centres: Essen, Cologne, Hamburg, Hannover, Berlin, Dusseldorf, Dortmund, Frankfurt, Manheim, Nuremberg, Stuttgart, Munich and Augsburg. Interactive (APL and CALL 370) is relatively low in demand while batch and remote bateh (RJE and TEDIS DB/DC system) are the main services.

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- AC-Service (UCC's West Germany representation) has also adopted the strategy of covering each local market with an independent computer centre. It has five centres in Germany (Dusseldorf, Offenbach, Hamburg, Munich, Stuttgart) and has used this same approach in other markets (e.g., with offices in London, Birmingham, and Manchester in the United Kingdom).

- Several large industrial companies have developed computer services groups that offer significant competition in West Germany. Foremost among these are Mathiesen-Kienzle-Datensystems (MKD), Taylorix, Mannesman, and Messerschmidt-Bolkow-Blohm (MPB).

- MKD has significant remote batch revenues from an on-line seat reservation and flight scheduling system and from RJE-sumbitted billing accounting and management information systems.

- Taylorix-Tymshare is a joint venture of Taylorix, a subsidiary of Stiegler Hauser, and Tymshare. Taylorix offers financial applications on a batch and remote batch basis, plus professional services. Taylorix-Tymshare offers Tymshare's line of interactive services.

- Mannesman is the international EDP division of Mannesman A.G. offering technical mathematical systems processing of an interactive, remote batch, FM batch, and professional services basis. This group is not competitive in the financial applications market.

- MBB offers mainly surveyor modeling, local land mapping, operations research, etc. Thus, while it is a competitior in the remote batch market, it is not for financial applications.

- GEIS has had markedly less success with its services in Germany than in the U.K. and in France. The current trend of the German market toward small business systems (Kienzle, Philips, Olivetti, Nixdorf) and minicomputers (DEC, HP, DG) doesn't help the development of RCS either. The nature of the market is towards decentralized processing (in-house computers, satellite processing at the limit), not on-line interactive services.

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EXHIBIT III C.1

THE TOP TEN REMOTE COMPUTING SERVICES VENDORS
IN WEST GERMANY 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	DATEV	19.7	+	19.7	56.2
2	IBM	12.7*	6.3*	19.0*	60.0*
3	MBB	9.9	0.6	10.5	1050.0
4	FIDUCIA	7.5*	0.8*	8.3*	23.0*
5	GEIS	+	6.7*	6.7*	6.7*
6	SLIGOS	3.5*	1.5*	5.0	9.0
7	AC-SERVICE	4.1	+	4.1	10.7
8	CDC	3.6*	0.4*	4.0*	4.6*
9	MANNESMANN	3.5*	0.4*	3.9*	39.2
10	MKD	0.4	1.0	1.4	9.3

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:

* INPUT ESTIMATE
+ SMALL VALUE

CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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EXHIBIT III C.2

RCS MARKET SHARES OF MAIN WEST GERMAN FIRMS

COMPANY	SHARE OF RCS MARKET (%)	
	INTERACTIVE	REMOTE BATCH
DATEV	+	14.2
IBM	22.5	9.1
MBB	2.1	7.1
FIDUCIA	2.9	5.4
GEIS	23.9	+
SLIGOS	5.4	2.5
AC-SERVICE	+	2.9
CDC	1.4	2.6
MANNESMANN	1.4	2.5
MK D	3.6	0.5

* INPUT ESTIMATE
+ SMALL VALUE

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- For the same reasons, the German CDC operation, (more remote batch oriented) fares better in relation to Honeywell than its counterparts do in other countries where interactive services are far more popular.

- The positions of the leading RCS vendors are shown in Exhibit III-C.1.

4. VENDOR MARKET SHARES

- Datev holds the largest share of the German RCS market, closely followed by IBM. Germany is IBM's strongest computer services market and computer equipment market, with a degree of synergy between the two.

- Datev's rise to the top is due to the conversion of much of the manual delivery/over-the-counter batch business, coupled with good growth of those tax consultants that are already on-line.

- GEIS is ahead of all other competitors for interactive services and took 35% of the 1978 market. However, the market for interactive is smaller, (approximately 30% of the UK market), even though the remote batch markets are approximately the same size in both countries. IBM is marginally behind GEIS with a 33% share.

- The industrial company subsidiaries Messerschmidt-Bolkow-Blohm, Mannesman, Mathiesen-Kienzle-Datensystems, Taylorix and Datenverarbeitungs-Service Oberhausen (subsidiary of the German Babcock group) have a combined market share of 12% of the 1978 remote batch market. Much of this work is captive (40% on average) but their financial strength makes them serious competitors.

- The interactive market is for all practical purposes divided between IBM, GEIS with 46.4% of the total market and the much smaller vendors. Market shares of leading vendors are given in Exhibit III-C.2.

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5. DATA COMMUNICATIONS

Services

- Two alternatives utilising the public networks of the Deutsche Bundespost are available as discrete data transmission services:

  - The telephone (PSTN) and telex networks are used to provide a speed range of 20 bits/sec up to 4800 bits/sec. Since these networks were set up originally for transmission of voice-grade and teletype messages they are subject to some constraints on quality.

  - The Datex network was established especially for the transmission of data and provides high grade lines for operating speeds ranging from 200 bits/sec to 48,000 bits/sec. All but the 300 bits/sec service operate in full duplex mode. The Datex network employs for the higher speeds, eletronic circuit switching and a 9600 bits/sec speed will soon be available.

- To satisfy user needs for dedicated circuits connections are allowed using PSTN or leased lines. Telephone type circuits are used, although, interconnection with the standard PSTN network is not allowed if the circuit is leased. In the latter case connections are only allowed between persons of the same legal entity. By introducing electronic circuit switching the Deutsche Bundespost is establishing an integrated telex and data network; the routing of fixed and leased circuits will gradually be absorbed by this new network.

- The Datex network for packet switching will be available in 1980.

- For international connection German users have:

  - Access to a similar range of countries to those offered by France and the UK with Datel; PSTN lines are used for this purpose also.

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EXHIBIT III C.3

PSTN CHARGES IN GERMANY

a) CONNECTION CHARGES

- INSTALLATION OF ONE LINE — 200 DM (TWO WIRE)
  — 400 DM (FOUR WIRE)
- RENTAL FOR ONE LINE/YEAR — 324 DM

b) TRAFFIC CHARGES

DISTANCE (km)	CHARGE/HR (DM)					
	PEAK		STANDARD		CHEAP	
	TEL	DATEX	TEL	DATEX	TEL	DATEX
LOCAL	0.23	–	0.23	–	0.23	–
DISTRICT	1.73	–	1.73	–	1.73	–
WITHIN ZONE	9.20	–	9.20	–	9.20	–
OUTSIZE ZONE ⩽ 25	18.40	16.25	12.27	10.85	12.27	10.85
25–50	27.60	27.05	18.60	16.25	12.27	10.85
51–100	55.20	48.65	27.60	24.17	12.27	10.85
> 100	69.00	66.85	36.80	34.61	12.27	10.85

NOTE: (i) PEAK RATE – 0600 TO 1800, MON–FRI; 0600 TO 1600, SAT

(ii) STANDARD RATE – 1800 to 2200, MON–FRI

(iii) CHECK RATE – 2200 TO 0600 MON–SUN; 1400 TO 2200 SAT; 0600 TO 2200 SUN

(iv) DATEX CHANGES ARE FOR 2400 BITS/SEC

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EXHIBIT III C.4

LEASED LINE CHARGES IN GERMANY

a) INSTALLATION CHARGES

- WITHIN SAME LOCAL TELEPHONE AREA: 2 WIRE–200 DM; 4 WIRE–400 DM
- BETWEEN DIFFERENT TELEPHONE AREAS: 2 WIRE–400 DM; 4 WIRE–800 DM

b) RENTAL

DISTANCE (km)	CHARGE/YR ('000 DM)
	WIDEBAND CIRCUITS UP TO 48 K Hz
5	12
10	24
50	72
250	105

DISTANCE (km)	CHARGE/YR ('000 DM)
	TELEPHONE CIRCUITS UP TO 3400 Hz
5	2.4
10	4.8
50	24.0
100	31.2
250	36.0

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- Datex is available only to Belgium and France (at 20 and 300 bits/sec).
- Leased lines are not normally offered but can be obtained under certain conditions.

Tariffs

- The quality of the German PTT network services is the best in Western Europe and is continually being improved. Quality is expressed as measuring the reliability of the lines provided, speed of support for installation modification, line capacity available for expansion and short delay in obtaining it.

- It is estimated that the German PSTN is, on average, never loaded beyond 80% capacity. The result is that dialed connections always get through (unless the number dialed is busy).

- The importance, to a businessman, of this feeling of "communicability" cannot be overstressed. One only has to try to do business in Italy (where the lines between major cities are always saturated during normal working hours) to fully understand the value of good communications. The frustration caused by faulty communication is bad enough, but not being able to "get through" at all has a disastrous effect on business morale.

- Unfortunately, this very high quality and availability of German communications has a stiff price. PSTN line costs are almost twice as expensive as the next most expensive peak rates in France and Norway (see Exhibit II-K).

- The cheaper PSTN connections are those that use lines that are greater than 100 km long (the longer the line, the better the relative cheapness). (See Exhibit III-C.3).

- The leased lines tariff is graduated similarly, but changes reduce more steeply with increasing distance (see Exhibit III-C.4). Overall the leased line rates in Germany are the most expensive in Europe, and by a large margin.

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- Connection charges are composed of two elements: Cost of the first installation and its rental thereafter. This can be quite expensive for a multipoint connection and very expensive for complex networks.

6. RECOMMENDATIONS

- There is no question that the potential of the West German RCS market outweighs all other European markets. To date, this potential has not materialized due to:

  - The availability and variety of local batch services.
  - The successful drive of the domestic (and foreign) vendors of the small in-house computer and office computer.
  - The high cost of communications.

- RCS competition is not formidable as yet in Germany. Vendors of broadly applicable financial applications have had some success, but not on the scale of the batch vendors. The demand for financial packages is high, however.

- Due to the distributed nature of the customer base (spread over 13 major city centers in all), local provision of services means restricted market coverage. Remote batch services, for this reason, hold the greater promise since they can build on existing batch services while taking advantage of the concentration of workload created by the use of a network.

- Prices for services of all categories in Germany are on a par with Sweden's - the highest in Europe. This situation creates opportunities for RCS where the processing centres are based in a cheaper country. (The IBM supercentre in the U.K., destined to service the whole of Europe, is an example.)

- If a remote batch marketing plan could be found that took advantage of the huge installed base of small computers (offering financial consolidation services to decentralized establishments), this could provide significant potential.

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D. SWEDEN/NORWAY

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III - D. SWEDEN/NORWAY

1. MARKET CHARACTERISTICS

- The Swedish market is characterized by high-end user prices and high staff and accommodation costs. On average, Swedish companies have a high percentage of staff dedicated to administration and low percentage of staff in sales/marketing. Turnover per employee tends to be lower in Sweden than in the other European countries.

- The Norwegian market is similarly competitive but with a predominance of local national suppliers such as Teamco, Fjerndata, Computas and Tronder-data.

- The RCS market in 1978 for Sweden is estimated by INPUT to have been worth $104M; in addition Batch Services accounted for $240M, other computer services $139M making a total for the complete computer services market of $483M.

- Growth rates for Sweden are expected to be 15% for Batch Services, 10% for Remote Batch Services and 25% for Interactive Services over the next 4 years. The emergent User Site Services are expected to surpass the growth rates for conventional services in this period; large organisations are already anticipating a 23% growth over the next 2 years in Sweden and 39% in Norway.

- Decentralisation of in house computing (DDP) is also a strong trend; in Sweden and Norway, users are in the process of deciding between the in house (DDP) and external (USHS) alternatives. In Sweden large organisation users appear currently to be opting for DDP with a 30% anticipated growth; in Norway they are taking the opposite view and opting for USHS with 32% projected growth.

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- In large organisations in Sweden and Norway the frequency of external computing services usage is the highest in Western Europe; 75% of large organisations in Norway, use these services and 71% in Sweden.

- Norway is the more frequent user of Remote Batch Services whilst Sweden is the more frequent user of Interactive Services.

2. MARKET TRENDS

- Not only are Swedish and Norwegian large organisations frequent users of external services, they are also big spenders. Around one third of current users spend more than 1M Kroner annually; a further quarter spend between ½M and 1M Kroner annually.

- The growth (or decline) of this expenditure favours Norway as the more exciting market, albeit on a smaller market size.

- In both countries the prospects for BATCH SERVICES in large organisations are pessimistic. More so in Sweden than in Norway; the declines anticipated by these users are - 15% and - 6% respectively.

- REMOTE BATCH SERVICES show good potential in Norway where a 18% growth rate is estimated in a market where Remote Batch usage is much higher than in Sweden. Large organisations will be the best hunting ground in which users expect a 29% growth/yr. in their requirements.

- INTERACTIVE SERVICES usage in Sweden is already larger than in Norway and this may explain the smaller growth rate of 20%. The bigger growth rate in Norway is also inflated by a high estimated growth by the lower expenditure user categories; this characteristic is in complete contrast with the pattern in Sweden.

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- USER SITE HARDWARE SERVICES are likely to grow at the highest annual rate for any external computing service. Apart from the increasing desire by users for some independance from their traditional computer service suppliers they are also finding an externally supported local mini an operationally and managerially attractive system. Annual growth rates by large organisations in Sweden and Norway are expected to be 23% and 39% respectively.

- Growth variations between different expenditure categories give a broad clue on the direction of migration. Small budget Batch is probably being transferred to a distributed mini or to a Remote Batch service, particularly in Norway. This possibly applies also in the case of the large budget category excepting that the computer load will also be absorbed by the central mainframe computer. Similarly User Site Services will benefit from the creation of new computer loads with big spenders and inheritance of existing small computer loads from the existing supplier.

- The best growth prospects for USHS will be found in the following industry sectors and application areas:

INDUSTRY	APPLICATION
Metal Manufacturing	General Accounting/Payroll
Mining/Quarrying	Production/Inventory
Wood Products	Marketing/Sales
Basic Metal	

- Since Metal Manufacturing and Mining/Quarrying are also the best growth areas for Interactive Services, a vendor's strategy for User Site Hardware Services should be concentrated in these two industry sectors first.

- Application areas will be the main multiplier for increasing business. Those with the overall best growth potential are:

  - Financial Analysis/Planning
  - Production/Inventory
  - Marketing/Sales
  - General Accounting/Payroll.

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- As previously stated application areas will be the multiplier for growth in services - or, conversely the agent of decline when migration from one service to another is occurring. Growth and decline may be attributed to external computing services as follows:

  - the growth expected for Remote Computing services is more likely to come from the marketing/sales, personnel and financial analysis/planning application areas.

  - the decline forecast for Batch services is more likely to come from the engineering/scientific, production/inventory and general accounting/payroll application areas.

  - the growth expected in User Site Hardware or combination services is more likely to come from marketing/sales, personnel, general accounting/payroll and production/inventory; in the last two application areas the opportunity may exist for suppliers of a user site service to replace the existing Batch suppliers.

- The highest proportion of large organisations are computer users (external or in-house) in the following application areas (in descending order):

  1. General accounting/payroll
  2. Financial analysis/planning
  3. Marketing/sales
  4= Production/inventory
  4= Personnel

- Users of external services do so more in:

  1. General accounting/payroll
  2. Financial analysis/planning
  3. Personnel
  4. Production/inventory
  5. Marketing/sales

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EXHIBIT III D-1

TOP REMOTE COMPUTING SERVICES VENDORS
IN SWEDEN 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	DAFA	7.8	2.6	10.4	26.0
2	SPADAB	2.0	7.1	9.1	38.6
3	DATEMA	0.7*	6.4*	7.1*	59.2*
4	KOMMUN DATA	6.36	–	6.36	31.8
5	BONNIER DATA	1.9	3.8	5.7	7.3
6	QZ STOCKHOLMS	1.8	2.7	4.55	6.36
7	IBM	3.7*	0.4*	4.1*	16.0*
8	GEIS	–	2.3*	2.3*	2.3*
9	CDC	1.9*	0.2*	2.1*	2.4*

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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- A comparison of the overall computer usage and the external usage shows a switch in the proportion of personnel and marketing/sales. Surprisingly perhaps, personnel is computerised more with an external service.

- A surprisingly high proportion of respondants claim to be using an on site service; engineering/scientific, financial analysis/planning, marketing/sales and general accounting/payroll are the most popular applications.

- In two years, the order of applications popularity for processing by an on site service is:

    1. General accounting/payroll
    2. Marketing/sales
    3. Financial analysis/planning
    4. Production/inventory

  This correlates well (three out of four) with the trend analysis above.

- The most promising application areas for future growth are:

    1. Financial analysis/planning
    2. Production/inventory
    3. Marketing/sales
    4. General accounting/payroll

3. COMPETITION

- SPADAB, DAFA, DATEMA and BONNIERDATA provide a strong domestic challenge to the foreign supplies (IBM, GEIS and CDC). (See Exhibit III-D.1).

- IBM is neither the largest overall supplier nor the prime supplier for either Remote Batch or Interactive Services.

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EXHIBIT III D.2

RCS MARKET SHARES OF MAIN SWEDISH FIRMS

COMPANY	SHARE OF RCS MARKET (%)	
	INTERACTIVE	REMOTE BATCH
DAFA	7.6	9.5
SPADA B	20.8	2.4
DATEMA	18.8	0.9
KOMMON DATA	–	7.8
BONNIER DATA	11.2	2.3
Q.Z. STOCKHOLMS	7.9	2.2
IBM	1.2	4.5
GEIS	6.8	–
CDC	0.6	2.3

* INPUT ESTIMATE
+ SMALL VALUE

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- SPADAB is owned by a consortium of Swedish savings banks and does a significant (55%) part of its business "internally" for these banks. SPADAB is also very active on the open market for financial applications, however.

- DAFA is state-owned and absorbs a considerable volume of local and central government business. Nearly 60 different local government clients make use of its services. This does not stof DAFA from achieving 35% of its revenue from the open market at prices that defy competition (much to the disgust of private competitors who feel that their taxes are being used to subsidize DAFA).

4. VENDOR MARKET SHARES

- The remote batch market is very evenly divided between the top four companies, but considering their different market emphases, none of the four really provide competition for the others.

- This is not the case in the interactive market, where Honeywell is easily ahead of all other vendors but is in direct competition with all of them for practically the same market - interactive financial services. Market positions of the leading RCS vendors are shown in Exhibit III-D.2.

5. DATA COMMUNICATIONS

- Data transmission services presently offered in Sweden and Norway are similar in scope and both use PSTN or private leased circuits.

  - Using the PSTN, speeds ranging from 200 bits/sec to 2400 bits/sec are available, full duplex mode is provided for all speeds, half duplex being available in all mid range speeds.

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- Private leased lines are available to cover all the services provided in the PSTN system.

- Higher speed ranges, typically 2400 to 9600 bits/sec are provided using baseband modems which must operate on a short distance (up to 20 km) physical line. In Norway the service is referred to as DCB 9600 and includes a lower speed of 1200 bits/sec. In Sweden the Baseband service can provide a higher speed of 19,200 bits/sec also.

- Meanwhile a separate network intended specifically for data transmission is being established by the PTT's of Sweden, Norway, Finland and Denmark. The Nordic Public Data Network (NPDN) when available will provide full duplex four wire operating mode at speeds ranging from 600 bits/sec to 9600 bits/sec. The basic purpose will be to provide synchronous transmission although it will be possible to connect asynchronous data terminal equipment for lower transmission rates. Line quality standards will be higher than for the current PSTN circuits.

- A packet switching service is to be offered (probably at the end of 1981) by the introduction of the x 25 interface in NPDN. Additional network components will be necessary to handle the interleaved multiplexing of packets from different suscribers. Such additional components will include packet switching exchanges and separate packet multiplexors. Eventually the Nordic packet switching network will be able to communicate with the packet switching networks elsewhere, for example TRANSPAC, PSS and EURONET.

- The standard range of PSTN and leased line services for data transmission (up to 9600 bits/sec) are available for international connections where compatible services exist at the other end. Access to the Telenet and Tymnet US networks is available through a node in The Netherlands.

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EXHIBIT III D.3

PSTN CHARGES IN SWEDEN/NORWAY

a) CONNECTION CHARGES

	SWEDEN	NORWAY
• LINE INSTALLATION –	340 SKr	1,000 NKr
• ANNUAL RENTAL –	200–272 SKr	300–636 NKr

b) TRAFFIC CHARGES

SWEDEN	
DISTANCE (km)	CHANGE/HR(SKr)
LOCAL	0.17
< 45	13.60
45 < 90	25.50
90 < 180	40.80
180 < 270	51.00
> 270	61.20

NORWAY	
DISTANCE (km)	CHARGE/HR(NKr)
LOCAL	13.4
ZONE	27.0
⩽50	67.0
> 50	121.0

NOTE: (i) PSTN TARIFFS ARE STANDARD FOR ALL TIMES AND DAYS IN SWEDEN

(ii) CHARGES FOR NORWAY APPLY TO ALL TIMES AND DAYS EXCEPT LOCAL AND WITHIN ZONE CALLS WHICH ARE CHEAPER OUTSIDE PEAK HOURS

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EXHIBIT III D.4

LEASED LINE CHARGES IN SWEDEN/NORWAY

a) INSTALLATION

- FOR DISTANCES UP TO 6 km – 500 to 700 SKr; OVER 6 km – 900 SKr

b) RENTAL

- IN NORWAY – 880 N.Kr.

DISTANCE km)	CHARGE/YR ('000 SKr or NKr)		
	SWEDEN		NORWAY
	2 WIRE	4 WIRE	
< 6	UP TO 0.5	UP TO 1.0	1.80
6–10	1.0	2.0	3.60
11–20	1.8	2.8	3.58
21–30	3.0	4.0	7.62
31–40	4.8	5.8	9.60
41–60	7.2	8.2	12.60
61–80	9.6	10.6	15.60
81–100	9.6	10.6	18.60
101–120	12.0	13.0	21.60
121–150	15.6	16.6	25.02
151–200	19.2	20.2	30.00
201–250	26.4	27.4	35.04
251–300	30.0	31.0	40.02
301–400	42.0	43.0	67.04
401–600	50.0	51.0	55.02
> 600	50.0	51.0	66.00

NOTE (i) TWO AND FOUR WIRE TARIFFS ARE THE SAME FOR LONG DISTANCE LINES IN NORWAY

(ii) IN NORWAY SURCHARGES ARE APPLIED FOR SPECIAL QUALITY (NKr 6000) AND DATA TRANSMISSION (NKr 4200) --

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Tariffs

- Sweden is unique in Europe in that there is an independent supplier of communications lines and modems (Televerket), which has not only helped to keep the line costs down, but has also accelerated the speed of market penetration. As a result, the penetration rate (numbers of telephones per head of population) is comparable to that of the U.S. (70%).

- Data transmission costs in Sweden are among the cheapest in Europe. PSTN charges are cheaper even than those in the U.K. (See Exhibit III-D.3).

- Although leased line rental is the second cheapest in Europe (after Luxembourg) the connect charges are the highest. (See Exhibit III-D.4).

- In neighbouring Norway charges are in the middle of the European range.

6. RECOMMENDATIONS

- The Swedish market is an attractive one, but extremely difficult to penetrate. Established vendors already provide a broad array of services and are aggressive competitors.

- The existence of heavily financed, strong RCS suppliers like SPADAB, DATEMA, and DAFA in the remote batch market preclude the overnight creation of a foreign source of services.

- Sweden is a viable centre for operations aimed at the Scandinavian market (Finland, Norway, Denmark, and Sweden), being situated in the geographical centre of that market and armed with excellent quality (and reasonable priced) telecommunications.

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- This approach has already been adopted by a number of computer services vendors in the Scandinavian market with good success.

- The Swedes are frequently multi-lingual, particularly with regard to the Scandinavian market, and consider the English language a second tongue. (There are several Swedish newspapers that provide English language editions.)

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E. BELGIUM/LUXEMBOURG

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III - E. BELGIUM/LUXEMBOURG

1. MARKET CHARACTERISTICS

- The Belgian and Luxembourg organisations are unique in Europe for their extreme tendency to contain the maximum proportion of their activities in-house, this is reflected in their low usage of external services ; only 33% of all large organisations use external services - other countries (except Germany) are above 40% and some are considerably higher (e.g. Norway 75%).

- Consequently this is proportionally the smallest market for computer services in Western Europe. From an overall services market total of $150M in 1978 (INPUT estimate), $62M was generated from Batch Services and $44M from software and miscellaneous services. The Batch Services component of the market is expected to grow at an annual rate of 18% between 1978 and 1982.

- The market for RCS services in 1978 was worth $44M - this being split $14M to Interactive and $30M Remote Batch. Growth in these two services is expected to be 24% and 12% respectively.

- Foreign-owned companies have a strong influence on the RCS markets: UCC (U.S.), IBM (U.S.), Burroughs (who operate a batch/remote batch bureau), CSC (U.S.), ADP (U.S.), COMSHARE (U.K./Canada), CEGOS-Tymshare (France), SIA-B (France).

- International operations, therefore, generate a high percentage of revenues (75%), particularly since the domestic suppliers, with the exception of CIG/GTS, are mainly small and privately held.

- International operations excepted, the domestic market is firmly entrenched in traditional, off-line data-entry/batch services (data preparation is a relatively good market in Belgium).

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- De-centralisation of computing is a noticeable trend in large organisations but in Belgium they are opting for the in-house (DDP) approach. The forecast annual growth rate for Distributed systems is 40% over the next 2 years ; this contrasts sharply with the 1% growth anticipated by large users for On-Site Services.

2. MARKET TRENDS

- In general the Belgium/Luxembourg market is one of the least rewarding in Europe for external service vendors. The market size is small for conventional (Batch, Remote Batch, Interactive) services ; nor are the growth prospects encouraging in large organisations.

- BATCH SERVICES will stagnate generally, although some growth will be found in large organisations (+ 1%), this service is more a small/medium organisation market and it is there that the overall market growth forecast of 18% will be achieved.

- REMOTE BATCH SERVICES have the best growth prospects of any type of external computing service. The forecast 12% is the second best in Europe; this suggests that in this do-it-yourself market Remote Batch is considered to be user controlled.

- INTERACTIVE SERVICES appear to have a bleak future with a large organisation existing user estimated decline of - 11%. Entirely new users and medium/small size organisation will make up the difference between this figure and the overall market forecast of 24%.

- ON SITE SERVICES have not yet made any measurable impact in this market although there are modest growth plans in some industries now.

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- Any growth prospects which may exist for Interactive services in their present form will be found in the following industries:

    1. Fabricated metal products
    2. Financial services
    3. Insurance
    4. Wood Products
    5. Paper/printing/publishing

- The highest proportion of large organisations are computer users (external or in-house) in the following applications (in descending order of usage):

    1. General Accounting/Payroll
    2. Marketing/Sales
    3. Production/Inventory control
    4. Financial Analysis/Planning

- In the financial sectors, Portfolio Management and International Cash Dealing are the applications areas of greatest usage.

- External services are used more for the following application areas:

    1. General Accounting/Payroll
    2. Marketing/Sales
    3. Financial Analysis/Planning
    4. Production/Inventory analysis
    5. Personnel

- In the financial sectors use of external services is negligible.

- The small trend towards On Site Services is most likely to occur in:

    - Engineering/Scientific
    - Production/Inventory control *
    - Personnel
    - Financial Analysis/Planning *

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- There is some correspondance * between the above trends and the application areas which are expected to experience the best overall growth in usage. These are:

    1. General Accounting/Payroll
    2. Financial Analysis/Planning *
    3. Production/Inventory control *

- In the financial sector there is no evidence of any shift towards On Site Services ; the growth in usage of Portfolio Management and General Banking applications will be completely covered by internal services.

- The best prospects for each of the previously mentioned best growth applications will be found in specific industries:

-	General Accounting/Payroll -	Basic metal *
		Fabricated metal *
		Electricity/Gas *
		Construction *
		Insurance
-	Financial Planning/Analysis -	Food/Drink/Tobacco
		Textiles/Clothing *
		Chemicals/Petroleum
-	Production/Inventory control -	Paper/Printing *
		Non Metallic *

- The industries market with an asterisk (*) offer good growth for two of the three application areas. Those industries should therefore be the most productive targets for future sales campaigns.

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EXHIBIT III E.1

TOP TEN REMOTE COMPUTING SERVICES VENDORS
IN BELGIUM 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	CIG/GTS	5.1*	7.6*	12.7	30.0
2	IBM	3.0*	2.8*	8.6*	15.0*
3	GEIS	–	3.5*	6.9*	10.3*
4	CDC	0.6	1.7	3.9	5.7
5	ORDA-B	2.7	–	2.7	6.7
6	SLIGOS	1.3*	0.7*	2.0	10.3
7	UCC	1.8*	+	1.8*	8.5*
8	ADP	–	0.9*	0.9*	1.0
9	COMSHARE	+	0.86	0.86	0.86
10	TYMSHARE	–	0.7	0.7	0.8

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED

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3. COMPETITION

- All major competitors are concentrated in Brussels, where 72% (53 out of the 74 vendors) have located their main offices. This is the only local market worthy of consideration (although national suppliers do have far wider coverage, of course); ORDA-B, for example, has offices in Bierbeek, Kortrijk, Antwerpen, and Maasmechelen in addition to its two offices in Brussels.

- The main competition for the interactive market is between IBM (whose presence is strongly felt in the small Belgium market for interactive and remote batch services) and GE's marketing representative, CIG/GTS. A challenge is slowly being mounted by COMSHARE based on highly price/competitive on-line services, but its revenues are, as yet, very small.

- The top ten vendors shown in exhibit III-18 cover 95.2% of the interactive market in Belgium. Others not shown include I.P. Sharp, Continental Computing, CEPOC, Sobemap, Mandata, and the University of Louvain.

- In the remote batch market, IBM leads with ORDA-B second. Along with UCC, these three absorb nearly half of the remote batch revenues in Belgium.

- A recent survey indicated that most of the batch and remote batch vendors were concerned with the rate of success of the in-house, minicomputer-based small business system, which has grown in popularity. Many vendors are looking to forestall the impact these systems could have on their revenues by entering into OEM agreements with manufacturers.

- The main RCS vendors in Belgium are listed in Exhibit III-E.1.

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EXHIBIT III E.2

RCS MARKET SHARES OF MAIN BELGIAN FIRMS

COMPANY	SHARE OF RCS MARKET (%)	
	INTERACTIVE	REMOTE BATCH
CIG/GTS	30.4	13.8
IBM	11.2	8.1
GEIS	14.0	+
CDC	6.8	1.6
ORDA B	+	7.3
SLIGOS	2.8	3.5
UCC	+	4.9
ADP	3.6	–
COMSHARE	3.4	+
TYMSHARE	2.8	–

* INPUT ESTIMATE
+ SMALL VALUE

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4. VENDOR MARKET SHARES

- Two thirds of the Belgium RCS market is divided between six vendors, as shown in Exhibit III-E.2.

- The small size of the total market makes even modest revenue appear as a significant share of the market. Nevertheless, the remote batch market is mostly divided between four vendors (IBM, ORDA-B, UCC, and CDC), while the interactive market is principally divided between only two, IBM and Honeywell (CIG/GTS).

5. DATA COMMUNICATIONS

- Although the markets of Belgium and Luxembourg are often considered together, the data transmission services offered are supplied by independant PTT's.

- PSTN and leased lines are available in both contries for speeds up to 2400 bits/sec; for higher speeds each country provides different services:

  - Speeds up to 9600 bits/sec are provided in Belgium on baseband for physical lines of short distance (up to 20km).

  - Speeds up to 9600 bits/sec are provided in Luxembourg with conventional telephone circuits. Speeds in excess of 9600 bits/sec are provided either by baseband or wideband; the latter have to be specially engineered and can provide speeds of 48K bits/sec and 72K bits/sec.

- Conventional telegraph and telephone circuits are available to connect internationally with countries offering compatible data transmission facilities (i.e. those which participate in International Datel). Connections are available through PSTN or leased circuits for speeds up to 2400 bits/sec. Connection with the Tymnet and Telenet networks are also available through a connecting node in Brussels.

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EXHIBIT III E.3

PSTN CHARGES IN BELGIUM/LUXEMBOURG

a) CONNECTION CHARGES

	BELGIUM	LUXEMBOURG
• LINE INSTALLATION –	4,700 B Fr	2,500 L Fr
• LINE ANNUAL RENTAL –	9,720-16,560 B Fr	5,400-9,600 L Fr

b) TRAFFIC CHARGES

DISTANCE (km)	CHARGE/HR (B Fr OR L Fr)	
	BELGIUM	LUXEMBOURG
LOCAL	5.00	3
SHORT TRUNK	93.75	60
MEDIUM TRUNK	187.50	
LONG TRUNK	375.00	

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EXHIBIT III-E.4

LEASED LINE CHARGES IN BELGIUM

a) INSTALLATION

- MINIMUM CHARGE FOR 4 WIRE – 5000 BF

b) RENTAL

DISTANCE	CHARGE/YR ('000 B Fr)	
	NORMAL QUALITY	HIGH QUALITY
LOCAL (SAY 5km)	26.28–52.00	61.78–115.50
ADJACENT ZONES	97.50	150.00
NON-ADJ ZONES	195.00	249.00

LEASED LINE CHARGES IN LUXEMBOURG

a) INSTALLATION

- STANDARD CHARGE FOR 4 WIRE CIRCUIT – 10,000 LF

b) RENTAL

DISTANCE	CHARGE/YR ('000 L Fr)
LOCAL	12.3
SAME SECTOR	49.8
DIFFERENT SECTOR	94.8

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- A packet switching service is planned for introduction in Belgium at the end of 1980. This will conform to internationally agreed standards, in particular the x 25 protocol. The system will be based on the 'virtual circuit' principal whereby all packets relating to one call follow the same route thus preserving the transmission sequence. Permanent virtual circuits will also be available to preserve the same route for all calls between two points. Access will be by PSTN or leased lines to the networks; network operating speeds will range from 2400 bits/sec to 9600 bits/sec.

Tariff

- Although PSTN line rental is the highest in Europe in these two countries, the peak rate changes are also the lowest. Conversely, leased line changes are relatively cheap. (See Exhibits III-E.3 and III-E.4).

6. RECOMMENDATIONS

- The Belgium market, in itself, certainly does not offer adequate motivation for locating offices in Brussels. The main attraction is the high number of international companies which have their headquarters in the city and who can be used as the leverage point for important international contacts.

- Brussels is also strategically placed with respect to the Netherlands, Paris (the largest slice of the French market), the Ruhr-Gebiet (the largest share of the German market), and is within striking distance of Copenhagen, London, Stockholm and Oslo.

- Modern office accommodation and well-educated EDP staff are available in Brussels to an extent not easily duplicated elsewhere. The "basic materials" for the creation of a high quality European operation are, therefore, available.

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- The national company tax laws are not over restrictive on the movement of capital. This enables flexible financial transactions and profit repatriation from subsidiaries.

- Belgium nationals are frequently bi-lingual and sometimes tri-lingual. Flemish is equivalent to Dutch and is easily understood by the latter and, to some extent, by the Germans. French, the other Belgium national language, provides the link with France, of course.

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F. HOLLAND

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III - F. HOLLAND

1. MARKET CHARACTERISTICS

- The Dutch market for all computer sercvices is of significant size in Europe; it being in 1978 45% of the size of the UK market and 25% of the size of the French market. Due to the open minded and free trading nature of the market it is well developed by strong competition between Dutch national, other European and US vendors; between them they have created a market which is as well, or better, covered than any other comparable European country.

- Five aspects, all of them positive, make the Netherlands an attractive market for the RCS vendor; profits from holding companies established there can be transferred out of the country without local taxes being applied; the Dutch are bi-, tri- or quadri-lingual, dependable and uncomplicated; communications costs are very low and of good quality; the road network and air routes afford excellent mobility; the Netherlands are centrally situated with respect to all of the other Western European countries.

- Despite its relatively small size, the Dutch market is expected to grow in line with most other European countries. Continuation of the thorough coverage and strong competition between vendors will give rise to a growth rate of (1978-1982) 14% for Batch Services, 10% for Remote Batch Services and 25% for Interactive Services. The demand for User Site Computing Services already exceeds these figures in large organisations ; they are estimating a 31% annual growth rate over the next 2 years.

- The majority of clients lie around and in the area between Amsterdam, The Hague, and Rotterdam, including the cities of Utrecht and Hilversum. Companies in those cities have a contiguous area of 50km diameter that encompasses 75% of the Dutch prospects.

- The sales by region in 1977 were as follows:

-	Den Haag (The Hague)	30%
-	Amsterdam	30%
-	Rotterdam	25%
-	all other	15%

  The investment policy of the Dutch Government is encouraging faster growth in the "other" areas, but the above distribution will not change dramatically in the next five years.

- Holland is the second highest user of external services overall particularly of Remote Computing Services.

- Growth in Batch Services will be less encouraging, especially in the large organisation sector where demand will decline.

- Holland is the second best growth prospect in Western Europe for User Site Services counter-balanced by being second lowest prospect for Distributed Processing.

- Dutch large organisations are the third lowest users of in house computers in Western Europe.

- As in all other countries the most popular two application areas for future development are Production/Stock Control and Financial Analysis/Planning.

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2. MARKET TRENDS

- BATCH SERVICES - In a recent INPUT user survey, the voting was 12 to 7 for decline of the batch sector. There were 20 votes in favour of stability and this is the most likely trend in the middle expenditure categories where the growth and decline votes balanced. In percentage terms the overall demand forecast by large users is - 16.8%; this does not take account of non users who may use Batch Services for the first time in the future. Overall, a 14% annual growth rate is expected, mostly with small organisations.

- REMOTE BATCH SERVICES - The overall trend is similar to, but less severe than, Batch Services. Both the voting and the quantified percentage estimates indicate a decline of - 0.7%. Modest growth however can still be expected from the big expenditure users (over 200K Guilders) ; otherwise the trend is towards slight decline by existing users in large organisations. Overall the annual growth rate is estimated to be 10%.

- INTERACTIVE SERVICES - Overall the trend is towards good growth (25%), particularly from the big expenditure users. The growth curve starts with positive values at an expenditure level of 50K Guilders and the growth rates increase markedly towards the over 200K Guilders expenditure category.

- USER SITE HARDWARE SERVICES, or On Site Computing, is expected to grow at 31% per annum. This is probably representative of the overall market since users in all sizes of organisation will find a valid reason for this form of distributed processing. Only in Norway is there a higher forecast growth rate (39%). However growth in DISTRIBUTED (in house) processing is at the lowest level. It appears from the corresponding figures for all countries in the survey that the trend is either more strongly disposed towards the extenal or the in house approach:

	COMBINATION (External)	DISTRIBUTED (In House)
Norway	39	32
Holland	31	23
Sweden	23	30
France	18	51
Germany	10	22

- The most computerised application areas in Industrial Organisations overall regardless of source are:

    1. Bookkeeping/Payroll
    2. Production/Stock Control
    3. Marketing/Sales
    4. Personnel
    5. Financial analysis/Planning

  The pattern will be the same in two years excepting that Financial Analysis will become more popular than Personnel.

- The most frequent use of external services currently occurs in:

    1. Bookkeeping/Payroll
    2= Personnel
    2= Technical/Scientific
    4. Marketing/Sales

  In two years time Bookkeeping/Payroll and Technical/Scientific will still be the most popular followed by Financial Analysis/Planning and Personnel.

- Some significant source changes are anticipated by users over the next 2 years. The most notable of those is the migration to internal and user site services generally at the expense of conventional external services, particularly Batch and Remote Batch.

- The move towards internal services will be most pronounced in:

    1. Financial Analysis/Planning
    2. OR
    3. Technical/Scientific
    4. Numerical Control
    5. CAD

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- The move towards user site services will be most pronounced in:

  1= Production/Stock Control
  1= Bookkeeping/Payroll
  3= Marketing/Sales
  3= Financial Analysis/Planning
  5. Numerical Control

- Overall, the best growth in usage will occur in:

  1= Production/Stock Control
  1= Financial Analysis/Planning
  2. Marketing/Sales
  3. Bookkeeping/Payroll
  4. Personnel
  5. Statistical Analysis

- The top two growth prospects above also have the best potential for distribution as standard products in many European countries since they are largely unaffected by differences in law, taxation and accounting conventions.

- The most computerised application areas in Financial Organisations both now and in two years time are:

  1. Bookkeeping
  2. Financial Transactions
  3. Payroll
  4. Financial Consolidation

- The application areas for which external service vendors are most frequently used are:

  1. Payroll
  2. Financial Analysis/Planning

- As in the industrial organisations the trend in sourcing of computer applications is moving away from conventional Batch and Remote Batch services towards in-house or on site services. Both approaches rely increasingly on mini computers.

- During the next two years there will be a migration of computer load to in-house facilities for (in order of trend strength):

    1. Portfolio Management
    2. Payroll
    3. Financial Analysis/Planning

- A migration to combination services will favour the following application areas:

    1. Statistical Analysis
    2. OR
    3. Financial Analysis/Planning

- Overall the best growth in usage regardless of source in the next two years will occur in:

    1. Financial Transaction/Consolidation/Bookkeeping (internal and combination)
    2. Statistical Analysis (combination)
    3. Portfolio Management/Financial Analysis/Planning (internal and combination)

- Generally, Business Services organisations are relatively small and their computer needs correspondingly simple. Payroll is the most frequently computerised application area by internal or external means. In house installations are occupied secondarily with Bookkeeping, support for consultancy projects is the secondary use of external services.

- The best growth will come from Bookkeeping.

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EXHIBIT III F.1

THE TOP REMOTE COMPUTING SERVICES VENDORS
IN THE NETHERLANDS 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	IBM	5.0*	5.0*	10.0*	10.8*
2	GEIS	+	6.3*	6.3*	6.3*
3	CDC	3.7	1.5	5.2	6.0
4	CCN	3.5*	0.2*	3.7	12.5
5	CVI	3.0	0.3	3.34	22.36
6	ACD	2.4*	0.7*	3.1*	10.8*
7	ADP	+	2.7*	2.7*	2.7*
8	RAET	2.4	+	2.4	12.5
9	ARC	1.1	–	1.1	10.8

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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EXHIBIT III F.2

RCS MARKET SHARES OF MAIN DUTCH FIRMS

COMPANY	SHARE OF RCS MARKET (%)	
	INTERACTIVE	REMOTE BATCH
IBM	20.0	9.1
GEIS	25.2	+
CDC	6.0	6.7
CCN	0.1	6.4
CVI	0.1	5.5
ACD	2.8	4.4
ADP	10.8	+
RAET	+	4.4
ARC	+	2.0

* INPUT ESTIMATE
+ SMALL VALUE

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3. COMPETITION

- Most of the international RCS companies are present. There are some notable exceptions however: CSS International (NCSS), and Rapidata. (See Exhibit III-F.1).

- Others who are present, but with small interactive revenues are: Infotech, Logisterion, Computer Centrum Groningen, Datastream, I.P. Sharp, Atkins On-Line, CSC, and Scicon.

4. VENDOR MARKET SHARES

- Nine companies share 61% of the Dutch RCS market, as shown in Exhibit III-F.2. The same group absorbed 42% of the remote batch market and 86% of the interactive market.

- IBM has a small share of the Remote Batch market (12%), closely followed by CDC, CCN (Computer Centrum Netherlands), ACD (Alpha Computer Diensten) and RAET. However, IBM is easily the largest RCS supplier in the Netherlands due to its combined strength in Interactive and Remote Batch services.

- GEIS is, as usual, the leading supplier of interactive services but with a higher market share than usual (33%). The nearest competitors are IBM with 26% and ADP/Cyphernetics with 14%.

5. DATA COMMUNICATIONS

- The current data transmission services available in Holland are based for the bulk of user requirements on telegraph and telephone type circuits. The services are:

- Dabas, a slow speed service covering up to 300 bits/sec and 1200 bits/sec; operating mode is asynchronous with half or full duplex options. The service is available on the PSTN or leased lines.

- Datel provides for a range of speeds up to 4800 bits/sec; operating mode is asynchronous or synchronous and half or full duplex. The service is available only on PSTN circuits.

- For higher speed and quality, special arrangements must be made with the PTT; the options available are:

  - High quality up to the CCITT recommendation M1020
  - Wideband circuits to allow speeds up to 64k bits/sec.

- Medium speed services will be available as a standard service in mid 1979 through the Idee service. This service will provide for speeds between 2400 bits/sec and 9600 bits/sec; operating mode will be synchronous and full duplex. Idee is being specially introduced for users who do not generate sufficient traffic to justify a leased line or need a back up facility for existing leased lines.

- A packet switching network is planned for the end of 1980. The service, called Datanet 1, will comprise:

  - 3 packet switching exchanges located in Amsterdam, The Hague and Arnhem
  - 57 remote concentrators
  - 1 network control centre.

  Customers will be connected to the network by 4 wire leased lines. Network speeds available will be 2400, 4800, 9600 and 48k bits/second.

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EXHIBIT III F.3

PSTN CHARGES IN HOLLAND

a) CONNECTION CHARGES

- INSTALLATION OF ONE LINE – 210 Dfl
- ANNUAL LINE RENTAL – 276 Dfl

b) TRAFFIC CHARGES

DISTANCE	CHARGE/HR (Dfl)
LOCAL	0.16 (PER CALL)
TRUNK (PEAK RATE)	13.2
TRUNK (OFF PEAK)	6.6

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EXHIBIT III-F.4

LEASED LINE CHARGES IN HOLLAND

a) INSTALLATION

- 2 WIRE – 165 Dfl
- 4 WIRE – 330 Dfl

b) RENTAL

	CHARGE/YR (Dfl)		
DISTANCE (km)	2 WIRE	4 WIRE	QUALITY 4 WIRE
LOCAL	210-450	420-900	840-1800
⩽ 10	2100	2520	3960
11-25	3000	3600	5040
26-50	4800	5760	7200
51-100	6000	7200	8640
> 100	6600	7920	9360

NOTE: i) CHARGES APPLY TO THE DABAS SERVICE

ii) WIDEBAND CHARGES ARE: INSTALLATION, 2,660 Dfl
ANNUAL RENTAL, 5,000-50,000 Dfl

iii) NORMAL QUALITY LINES ARE TO CCITT SPECIFICATION M1040; "QUALITY 4 WIRE" LINES ARE TO M1020

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- The Dabas and Datel services are internationally available and connect with all other contributing countries to the International Datel service. Idee will not be available internationally, excepting to the USA.

- Datanet 1 will not be internationally available in its first phase; at a later stage however this network will become the link with Euronet and other packet switching systems elsewhere.

Tariffs

- PSTN charges (see Exhibit III-F.3) are among the cheapest in Europe and one of excellent quality.

- Leased line charges (see Exhibit III-F.4) are also at the lower end of the European range for both installation and annual rental.

- A typical line change between London and Holland is 120K Guilders/year.

6. RECOMMENDATIONS

- As with Belgium, barring acquisition, the Dutch market is too small to allow new entrants a reasonable chance of success. All of the major prospects have been identified long ago and are regularly visited by the existing RCS vendors.

- For tax reasons, for the flexibility offered by Dutch staff (who frequently speak four languages - English, French, German, and Dutch - which is also understood by the Flemish part of Belgium) and for the tax rules applying to the movement of capital into and out of the country, the Netherlands can be a useful base of European operations, once thy have grown to international proportions. As such, a holding company in Holland makes sense, even if straight market entry does not.

- The very low cost of telecommunications and the central location of the Netherlands with respect to large regions such as the Ruhr-Gebiet (Germany) has encouraged General Electric to locate its supercentre in the Netherlands. A circle of 400 miles around Amsterdam covers all of West Germany, most of England and Scotland, Berne, Paris, Belgium, and Luxembourg.

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G. OTHER MARKETS

III. G. OTHER MARKETS

1. ITALY

1.1 Market Characteristics and Competition

- In 1978, the Italian market was $429M, the fourth largest market in Europe. This value does not include captive revenues.

- Over 1,150 computer services companies were identified in INPUT CAMP/Italy research, half of which have less than ten employees.

- The largest computer services companies offering RCS services are (in order of overall revenue):

  - Datamont ($22.3M)
  - IBM ($21.2M)
  - Data Management ($17.0M)
  - GE-DA ($10.0M)

- The companies which have the largest RCS revenues are IBM, Datamont, GEIS and CDC (see Exhibit III-G.1a).

- The Italian RCS market was only 11% of the total of $429 million in 1978 - nearly two and one half times smaller than the proportion found in other countries.

- IBM has made an important effort towards improving the RCS service and has narrowed the gap with GEIS in interactive services.

- DATAMONT provides 90% of its services to the Montedison group and only 10% to other commercial entities.

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EXHIBIT III G-1.A

THE TOP REMOTE COMPUTING SERVICES VENDORS
IN ITALY 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	IBM	9.3*	5.9*	15.2*	21.2*
2	HIS	+ *	6.1*	6.1*	6.1*
3	DATAMONT	5.1	1.4	6.5*	22.3
4	CDC	4.2*	0.3*	4.5*	4.5*
5	DATA MANAGEMENT	2.7	+	2.7*	17.0
6	GE-DA	2.2	–	2.2*	10.0
7	SE-DA	1.8	–	1.8*	1.8
8	ADP	–	1.4*	1.4*	1.4*

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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- ADP-Cyphernetics is now one of the main interactive services vendors active in Italy, with offices in Milan and Rome.

- Other interactive vendors include INFONET (owned by GEDA), SIPE OPTIMATION, DATA AUTOMATION, and SICIT. Other remote batch vendors include AUSELDA and ITALSPED in addition to the above.

- Italian banks have dual role in Italy's services industry: a) they own several large services vendors and, through them control 15% of the available Italian market; b) bank computer centres, companies or consortia (mainly small and medium size banks) provide an important part of the computer services for the banking sector.

- Services companies are mainly (70%) located in the North of Italy, particularly in Lombardy (36%), Piedmont (12%) and Vaneto (10%). Only 10% of the services vendors population is in or around Rome.

- Despite repeated difficulties of establishing a viable network of public switch lines, Italy has nevertheless developed an underlying demand for RCS services which is spread among very few vendors. As a result, each sees its market expanding rapidly.

- With the high concentration of business north of the Genoa/Bologna line, serving the larger part of the market is not too costly from any one of a dozen cities. The added attraction of the north is that the congestion of Rome (the administrative and political centre) is avoided.

- Politically and socially, Italy continues to be unstable. The market is nevertheless the fourth largest in Western Europe - an attraction not to be overlooked.

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1.2 Data Communications

- Transmission speads are available ranging from 200 bits/sec up to 240K bits/sec. These are provided as follows:

-	Public telephone network	200 bits/sec to 2400 bits/sec
-	Leased telephone circuits	200 bits/sec to 7200 bits/sec
-	Baseband	2400 bits/sec to 96K bits/sec
-	Wideband	48K bits/sec to 240K bits/sec.

- A packet switching service is planned for introduction in 1981; this will operate at 2400 bits/sec up to 48K bits/sec.

- For international connections the PSTN is interfaced with the International Datel network; private lines can be arranged to most locations in the world whether an international system is available or not.

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2. AUSTRIA

2.1 Market Characteristics and Competition

- Austria is a relatively small market in both geographic and value size. The market is valued at $60M in 1978.

- The main participants in the Austrian market offering RCS services are listed in Exhibit III-G.1b.

- Three of the largest RCS companies are American owned, namely CDC, GEIS and AC Service (UCC).

- The Austrian market has not been encouraging for RCS vendors until recently since the PTT has not offered equipment and services tailored for data transmission.

2.2 Data Communications

- Until recently the Austrian PTT did not offer services or equipment for data transmission. Consequently users procured their own equipment and after the necessary approvals had been obtained they were able to proceed. However a Siemens EDS exchange located in Vienna forms a starting point for modern data services; this exchange is due to be offering data transmission up to 300 bits/sec by mid-1979. The second exchange will be installed in Salzburg in 1980. The new EDS network will be connected to similar networks in Germany and Switzerland.

- Meanwhile transmission facilities are available over the telex, PSTN or private leased circuits. Speeds ranging from 50 bits/sec up to 240K bits/sec, as follows:

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EXHIBIT III G-1B

THE TOP REMOTE COMPUTING SERVICES VENDORS
IN AUSTRIA 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	CDC	4.0*	0.4*	4.4*	6.29*
2	GEIS	+	0.7*	0.7*	0.7*
3	GREGOR	–	0.4	0.4	2.1
4	VORARLBERGER R.2.	0.03	0.1	0.12	3.15
5	AC SERVICE	1.7*	+	1.7*	4.3

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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- Public Telex, up to 50 bits/sec, half duplex,
- Telegraph, up to 200 bits/sec, half or full duplex,
- PSTN, up to 2400 bits/sec, half duplex,
- Leased telephone circuits, up to 9600 bits/sec, half or full duplex,
- Wideband, 48K or 240K bits/sec.

- International connections are available through the telex. PSTN or private leased telephone circuits.

- The Austrian PTT does not, and does not plan to, supply or maintain terminal equipment; provision of equipment and seeking the necessary approvals is the responsibility of the user.

- There are no plans for a packet or message switching system.

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3. SWITZERLAND

3.1 Market Characteristics and Competition

- The Swiss market is valued at $80M and is one of the smallest in Western Europe.

- The main RCS competitors are listed in Exhibit III-G.1c.

3.2 Data Communications

- Transmission speeds ranging from 300 bits/sec up to 2400 bits/sec are available on PSTN or leased telephone lines. The Austrian PTT supplies modems for all operating speeds and modes. In the public network only 2 wire, and simplex or half duplex operation are available.

- Higher speeds are available with baseband facilities which extend the range to 9600 bits/sec.

- International calls are either dialled over the PSTN or booked with the operator for connection with the international Datel network. Also, connections with the Telenet and Tymnet networks in the U.S. are available through transatlantic lines supplied by Radio-Suisse Ltd.

- There are no plans for packet or message switching services; a link with EURONET is planned however.

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EXHIBIT III G-1C

THE TOP REMOTE COMPUTING SERVICES VENDORS IN SWITZERLAND 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	CDC	13.5*	1.5*	15.0*	17.6*
2	IHA	1.4	–	1.4	7.0
3	INTERDATA	0.6	0.4	1.0	12.4
4	GEIS	–	1.0*	1.0*	1.0*
5	DATRON A.G.	0.8	0.17	0.97	4.2
6	PROGNOS. A.G.	–	0.5	0.5	5.9
7	TELECOMCENTRE	–	0.36	0.36	1.8
8	ELDATOR A.G.	–	0.28	0.28	0.7
9	HOWEG DATA A.G.	0.02	0.11	0.13	1.0

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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4. DENMARK

4.1 Market Characteristics and Competition

- The Danish market in 1978 was worth $222M which is at least a significant market size. When considered as a part of the Nordic group the Danish market looks more attractive. The Nordic market in total was worth aroung $600M in 1978 - a size which is comparable with that of the German market.

- The largest computer services vendors offering RCS services are listed in Exhibit III-G.1d.

4.2 Data Communications

- Transmission speeds available range from 50 bits/sec up to 48K bits/sec. These are provided as follows:

-	Telex network/leased circuits	- 50 bits/sec
-	Public Telephone Network	- 200 bits/sec to 2400 bits/sec
-	Leased circuits only	- up to 48K bits/sec

- A packet switching services is planned for availability in 1981.

- International connections are possible using the telephone and telex circuits. Access to U.S. certain databases is available via a concentrator in Amsterdam.

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EXHIBIT III G-1D

THE TOP REMOTE COMPUTING SERVICES VENDORS IN DENMARK 1978

RCS RANK	COMPANY	RCS SERVICES ($MILLION)			ALL SERVICES TOTAL ($M)
		REMOTE BATCH	INTERACTIVE	TOTAL	
1	KOMMUNE DATA	8.0*	4.0*	12.0*	60.0*
2	DATA CENTRALEN	1.8	7.1	8.9	44.65
3	IBM	2.9*	1.2*	4.1*	*
4	GEIS	+	4.8*	4.8*	4.8*
5	DATA INFORM	1.5	0.76	2.26	7.62
6	JDC DATA	—	2.0	2.0	20.0
7	RC DATA SERVICES	—	2.0	2.0	20.0
8	CDC	1.45*	0.25*	1.7*	2.13*
9	REGNECENTRALEN	0.06	0.02	0.08	18.3

SOURCE: INPUT CAMP/EUROPE 1979

NOTE:
* INPUT ESTIMATE
+ SMALL VALUE
CAPTIVE REVENUES WHERE KNOWN ARE OMITTED.

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IV ACHIEVING MULTI-NATIONAL STATUS

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IV. ACHIEVING MULTI-NATIONAL STATUS

- The variety of approaches that are open to a European vendor entering an additional country market should not be regarded as just so many options. In reality, of course, there is only one ideal solution for a given situation.

- In addition to the legislative limitations that apply to certain types of services vendors (e.g., banks), there can be ownership-related restrictions on markets served (conflict of interest), nationality-related barriers and government refusals that can negate the achievement of otherwise attractive transactions.

- The pros and cons of the four main categories of options are examined below.

A. RESTRICTIONS, BARRIERS AND OPPORTUNITIES

- Each European computer services country market has a business/market profile that is unique and which places restrictions on the type of approach that can be adopted by suppliers but that also offers concrete opportunities to the discerning vendor.

- There is little point, for example, in attempting to serve the Dutch market from Dusseldorf, whatever the attractions of the logistics. The Germans and Dutch don't mix well.

- In the same way it must be recognized that there are two business communities in Belgium, which are separated by much more than mere languages.

- These nationality-related limitations are far more serious, in a sense, that the "all or nothing" type of barriers that governments can impose. Whereas with the right approach and shrewd negotiations, the latter can be overcome, the former are unlikely to change in the foreseeable future, regardless of the resources deployed.

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- It is galling for a U.S. vendor to be refused permission to acquire a French company on the ground of conflict with the "national interests". However, most situations of this nature can be avoided if planned for. Perseverance will eventually win through, particularly if, for example, adequate pressure is brought to bear on authorities through the unions.

B. THE ACQUISITION ROUTE

- Most favoured among the expansion routes into Europe and therefore a good option for US or UK entrants, the acquisition approach has many obvious advantages:

  - No lengthy start-up, instant revenue volume, instant market presence.

  - Vehicle for distribution of existing parent-developed products and procedures (know how), and for instant market expansion through international reference selling of combined company strengths.

  - A working team of nationals (language ability); an established business site; registered, operating company entity.

  - Established client base (important not only for the services they currently buy but for the revenue base expansion they can provide).

- Less obvious are the disadvantages:

  - Lengthy decision time for the acquisition's completion (can be several years) - but developing from scratch can take ten years.

  - Dropping "unrelated" services from the new acquisition can give the parent a bad name (externally and internally).

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- Internal politics are inherited with the acquisition and are often deep-rooted.

- Degraded image following the acquisition (e.g., main center of decision displaced from local town to a foreign country).

- Foreign control adds a layer of management (however, career paths are lengthened for the acquired staff).

- New business methods are not understood, applied poorly or simply rejected.

- But despite the problems, the acquisition approach makes the most sense from business, timing and growth standpoints. In addition, it is often possible to achieve an industry-based synergy with results in expansion of the parent's own business scope, through the infusion of related or expanded services that are germane to, connected with, or complementary to the industry(ies) already serviced by the parent. Examples are civil engineering, offshore oil exploration, scientific processing, netowrk implementation, financial planning, systems data base services, and stock market quotation. All are transportable.

C. THE JOINT VENTURE

- While offering some attractive options in the short and medium term, the joint venture is rarely a long term strategy that offers infettered growth. Inevitably, the time will come when the two (or more) partners' interests will conflict, resulting in internal stress or a limitation in expansion for one or several of the participants.

- In the early stages the attractions are many:

  - The combination of hitherto separate products and services can create a viable new market opportunity for both partners.

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- In the European environment, the addition of American technology to a domestic operational entity comprising the necessary local contracts and understanding of the national market can prove a powerful combination.

- A truly synergistic venture is not too difficult to identify (e.g., hardware systems vendor with a local systems house having the appropriate industry specialization).

- Start-up funding (and consequently risk) is shared, i.e., lessened for both partners.

- There are parctically no governmental/legislative restrictions on the creation of most joint venture arrangements in Western Europe.

- Both (all) partners can persuade themselves they are getting the best deal, etc.

- But in the short term, simple problems can provide points of contention: how are the start-up costs spread? How are the early losses recouped (frequent source of acrimony)?

- Longer term problems can be worse. For example, if the agreement allots a territory to a partner who reveals himself incapable of handling it, how does the other partner regain control without jeopardizing the parts of the agreement that are functioning well?

- For these and similar reasons, the best joint venture is one of finite duration, i.e., having a stated life after which the option is provided to both partners of renegotiating the conditions, shares and scope of the original agreement. At the very least, it can defuse the on-going operational tensions during the current agreement, in that they will "not last for ever". In the best case it allows one or both partners to redefine the scope of his intentions and restructure his efforts accordingly.

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D. THE SPIN-OFF OPTION

- The option presented here is basically that of identifying, for acquisition or joint venture, a large in-house computer services center that offers:

  - A large computer resource that is compatible with the processing service of the acquiring vendor.

  - Substantial in-house processing that is unlikely to be displaced by a change of ownership of the centre.

  - A good opportunity for entering into close contact with the sector market in which the computer centre's parent is active.

- The former are all short-term benefits. Longer term benefits can include:

  - Top-level contacts in major company groups (again through the parent of the spun-off computer centre).

  - Availability of an on-going concern with an established client base.

  - An established staff team.

- The most crucial aspect of such takeovers is the ability of the acquirer to organize quickly an effective marketing effort to establish a client base. For obvious reasons marketing is unlikely to be strong in the in-house center and the number of clients is most likely to be limited.

- Ideally, a long-term contract of service to the spin-off's parent is an integral part of the agreement and in both parties' interests: the parent receives a guarantee of the continued availability of vital services; the acquirer obtains a guaranteed minimum revenue on which to build a commercially viable business.

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- What can prompt a parent company to enter into such an arrangement? In most cases, the initiative must come from the acquirer, who needs to convince the parent that there is:

  - A natural fit of capabilities within the two companies ("we understand your business").
  - Compatibility of product and service between the two.
  - A commercial market for the combined product/services offering of the two companies.
  - Marketing know-how from the acquirer.
  - Real (momentary) gains to be had from the joint venture or acquisition.

- The main objective is to exploit the better perception of the market potential (by the acquirer) in exchange for a foothold in a foreign market and the backing of a well known domestic (if not international) parent company.

E. GOING IT ALONE

- Despite the many difficulties and often high start-up costs associated with starting from scratch in a foreign country, the long term benefits of this approach are frequenly well worth the effort.

- Provided that timing is not crucial, large investments are not necessary and negative cash flow can be kept within $200,000 for a small three man office. The vital keystone to operations of this nature is the individual chosen to head the new subsidiary.

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- There is very little excuse justification for not choosing a national for this important role, however tempting it may be to place control in the hands of in-house staff. Each European country market environment is a matrix of very particular laws, regulations, customs and habits that take years for an outsider to grasp. It is far better to buy this knowledge in the shape of a seasoned professional who has a successful track record with the competition or related services markets.

- When all is said and done, finding space, recruiting staff, doing battle with the local PTT, establishing an image, etc., can be far less fearsome than dealing with internal politics inherited from a merger or legal battles over territory from a joint venture and similar hidden effects of otherwise attractive operations.

- The final choice will be made by balancing the related factors of revenue targets, product mix, country chosen, internal/external personnel resources, financial aspects and the like. A basic fact is that market opportunities exist in Europe for new entries, and alert companies will capitalize on them.

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V MAJOR RCS VENDORS IN EUROPE

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V. MAJOR RCS VENDORS IN EUROPE

A. MULTI-NATIONAL COMPANIES

- Multi-national RCS companies such as IBM, GEIS, ADP, CDC, CSC, UCC and COMSHARE have several important characteristics in common, namely:

  - all have their origin in North American corporations

  - nearly half are derived from hardware companies and most of the remainder are becoming increasingly involved with hardware marketing

  - the data services operations of these companies are geographically more widely distributed that any indigenous European competitor

  - the data services operations of these companies are larger by total revenue than their European counterparts, and, in some cases they are larger on the basis of European revenue alone.

  - all benefit from the relatively enlighted attitude towards investment of North American companies an due to their corporate size are in a strong position to make money available for new products and services.

- The RCS companies which derive from hardware suppliers are able to benefit from their parenthood in several ways:

  a) hardware can be supplied internally on an at cost basis

  b) systems and applications software can be supplied on a favourable cost (where normally charged) and support basis

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c) the development cost of RCS systems and applications software can be spread over the hardware sales as well when applicable to the wide market

d) RCS marketing benefits from the image and marketing activities of the larger hardware side of the business

e) in the trend towards "on site" computing the hardware supplier owned RCS companies have a strong case when presenting their assurances to prospects on hardware support and maintenance.

- The multi-national vendors listed in Exhibit II-E are all included in the following Company Profiles. These describe the development, size, products, services and equipment of each vendor. Where vendors operate in some countries with a different name they are accorded individual Company Profiles (e.g. UCC (U.K.) and AC Service).

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B. MULTINATIONAL COMPANY PROFILES

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COMPANY PROFILE

ADP NETWORK SERVICES INT'L
179/193 Great Portland Street
London W1N 5TB

Tel: (01) 637-1355

Brian Tytherleigh
Managing Director
Total sales 1978 est.): $9.3M (U.K.)
Fiscal year ending 30th June
Total Staff (Europe): 270

THE COMPANY

- The merger in July 1976 of Time-sharing Ltd (TSL) and Cyphernetics' European operations formed the basis of ADP NETWORK SERVICES International. TSL, formed in 1967, was partially acquired by Delos in 1969 (and wholly in 1972) and was acquired by ADP in April 1976. ADP bought Cyphernetics in 1975.

- European operations, trading as ADP Network Services International, are headed by Brian Tytherleigh. There are four other International Group companies:

  - ADP Commercial Ltd (formerly Management Dynamics and part of ADP Commercial Services International)

  - ADP Dealer Services Ltd (Motor trade)

  - ADP Benelux (formerly I.E.A. and part of the Commercial Service Group)

  - Systems S.A. Brazil

  Note: ADP Network Services Ltd, formerly TSL, is from 1978 part of ADP-NSI.

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These four companies have common Financial, Personnel, Marketing Services and Administration management but their own Marketing, Sales and Support staff. Customer services are also pooled (e.g. collection/delivery etc.)

- The UK Timesharing activities, while expanding sales rapidly, has suffered from a decreasing net margin. This was particularly true of 1977 where the combined strain of the merger of TSL with Cyphernetics services and rapid growth impacted profit. The European Cyphernetics (i.e. non-UK) timesharing activities have held up well and are expanding rapidly.

- Total European revenues of ADP-NS, ADP Ltd and the IEA group in Rotterdam (Netherlands) will be approximately $16.5 in the 1977/78 period ending June 30th. This is divided approximately into:

  - $4.2M for I.E.A.
  - $3.8M for Cyphernetics' European operations
  - $5.5M for the UK (TSL) timesharing operations

  These estimates cannot be verified since ADP does not publish a separate accounting breakdown beyond the U.S. 10-K reports. In addition, the Management Dynamics Batch Operation and appr $2M.

- The European acquisition chronology (so far) in Europe is as follows:

  - 1974 acquired I.E.A. (Holland)
  - 1975 acquired Cyphernetics (through U.S. Acquisition)
  - 1976 acquired TSL, UK (through Delos in the U.S.)
  - 1977 acquired Management Dynamics, UK.

KEY PRODUCTS AND SERVICES

- In the business management tool area, ADP offers TSAM (Time Series Analysis), IPL (Information Processing Language), Manager (an MIS Package), ORACLE (business planning and control system) BUDGET (budget producing Oracle-based package), FML (a U.S.-developed Oracle-like financial modelling language now being introduced), AMACS (an IR2-based manufacturing control system) and APECS (a project evaluation and control package).

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- Database-oriented systems include the Chase Econometric database, COMPUSTAT (financial data, updated weekly, on over 3,500 U.S. companies) and EXSTAT (English equivalent).

- Specialist applications include INTEROPT (Linear Programming), CUPID, GINOF and CYPHERGRAPH (graphics packages), Sofdata's numerical control packages (in Italy mainly), simulators and cross-compilers for some makes of minicomputers (including DEC), EXCALIBUR (a survey cross-tabulation package) and SUPSTAT (statistical analysis).

- The main revenue earners are IPL/Manager, TSAM, ORACLE and APECS.

GEOGRAPHIC COVERAGE

- ADP European country coverage is unequal for historic reasons with the main strength in the UK and Holland. The full list of access points to the International Network are:

-	UK/Eire	:	London, Manchester, Birmingham, Durham, Leeds, Edinburgh, Glasgow, Hounslow, Welwyn Garden City, Wakefield, Loughborough, Andover, Bristol, Liverpool and Dublin.
-	Holland	:	Amsterdam, Eindhoven, The Hague
-	Belgium	:	Antwerp, Brussels
-	Germany	:	Cologne, Frankfurt, Essen
-	Italy	:	Milan, Rome
-	Switzerland	:	Zurich

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- Two agencies are in operation, one in Ireland and the other in Switzerland (Winter Partners).

SYSTEMS HARDWARE

- Apart from the Cyphernetics processing centre in Ann Arbor, Michigan, USA (to which the central concentrator in the Hague is connected), ADP-NSI's London based centre has four dual DEC K110s, each with 384K. Total on-line disc storage is 4.8 billion characters.

- PDP 8s and 11s are used for multiplexing/front ending and high speed printers are located at nearly all of the continental sites plus Manchester, Birmingham, Glasgow and Bristol in the U.K.

- In the U.S., 17 DEC 10s are configured as 13 separate systems. Network loading will determine the location of hardware expansion.

- Any teletype compatible terminal or one accepting EBCDIC code can be attached to the ADP network. ADP also rents DEC writer terminals to users.

PRICE HISTORY

- Over the past three years, ADP-NSI has made several price adjustments to its tariff, as follows:

  - As of 1/7/75 the processing resource unit of the TSL service was restructured resulting in a 7% average increase to users.

  - On March 1st 1976, the algorithm for charging was changed which increased charges by 5%.

  - On March 1st 1977 peripheral (terminal, printer) charges were altered, increasing costs by 2 to 3%.

  - On September 1st 1977 as off-line clients moved on-line, the storage prices were reduced.

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PRODUCT AND MARKETING STRATEGIES

- The produce strategy of ADP's timesharing division is structured around the products in hand which have been acquired through TSL and Cyphernetics. In some cases a decision must be taken where two products compete for the same market (e.g. Manager (TSL) and IPL (Cyphernetics). The ADP name has, of course, now replaced the previous trading names of the acquisition. ADP concentrates on servicing the large users and on the prime application areas. The Cyphernetics operating system is being offered to new accounts.

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COMPANY PROFILE

ADP NETWORK SERVICES INTERNATIONAL INC
RUE DE LIVOURNE, 7 B4
1050 BRUSSELS

TEL : 02/538.89.62

Office in Antwerpen

Malcolm Scoggins
Manager Belgium
Total sales 1978 (est)
: 30M BF
Fiscal Year ending 30th June
Total Staff : 15-20

THE COMPANY

- The operations of the company started in Belgium late 1973 with the creation of a subsidiary of Cyphernetics International Corporation in Brussels. At the same time the Delos Group, who owned Time Sharing Ltd in the U.K. created a Belgian subsidiary Time Sharing S.A. The merger in July 1976 of Time-sharing Ltd (TSL) and Cyphernetics European operations formed the basis of ADP Network Services International Inc. TSL was acquired by ADP in April 1976. ADP bought Cyphernetics in 1975.

- European operations trading as ADP network Services International are headed by Brian Tytherleigh U.K. The director of European marketing is Hans Schilte Netherlands. There are four other International Group companies:

  - ADP Commercial Ltd (formerly Management Dynamics and part of ADP Commercial Services International)

  - ADP Dealer Services Ltd (Motor trade)

  - ADP Benelux (formerly I.E.A. and part of the Commercial Services Group)

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- Systems S.A. Brazil

Note : ADP Network Services Ltd, formerly TSL, is from 1978 part of ADP-NSI

- These four companies have common Financial, Personnel, Marketing Services and Administration management but their own Marketing, Sales and Support staff. Customer services are also pooled (e.g. collection/delivery etc).

- Total European revenues of ADP-NS, ADP Ltd and the IEA group in Rotterdam (Netherlands) will be approximately $16.5 in the 1977/78 period ending June 30th. This is divided approximately into:

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- These estimates cannot be verified since ADP does not publish a separate accounting breakdown beyond the U.S. 10-K reports. In addition, the Management Dynamics Batch Operation add approximately $2M. The European acquisition chronology (so far) in Europe is as follows:

  - 1974 acquired I.E.A. (Holland)
  - 1975 acquired Cyphernetics (through U.S. Acquisition)
  - 1976 acquired TSL, U.K. (through Delos in the U.S.)
  - 1977 acquired Management Dynamics, U.K.

KEY PRODUCTS AND SERVICES

- Advanced time-sharing services for management application.

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- In the business management tool area, ADP offers TSAM (Time Series Analysis), IPL (Information Processing Language), Manager (an MIS package), ORACLE (business planning and control system) BUDGET (budget producing Oracle-based package), FM (a U.S.-developed Oracle-like financial modelling language now being introduced), AMACS (an IR2-based manufacturing control system) and APECS (a project evaluation and control package).

- Specialist applications include INTEROPT (Linear Programming), CUPID, GINOF and CYPHERGRAPH (graphics packages), Sofdata's numerical control packages (in Italy mainly), simulators and cross-compilers for some makes of minicomputers (including DEC), EXCALABER (a survey cross-tabulation package) and SUPSTAT (statistical analysis).

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- ADP European country coverage is unequal for historic reasons with the main strength in the U.K. and Holland. The full list of access points to the International Network are:

- U.K./Eire	:	London, Manchester, Birmingham, Durham, Leeds, Edinburgh, Glasgow, Hounslow, Welwyn Garden City, Wakefield, Loughborough, Andover, Bristol, Liverpool and Dublin.
- Holland	:	Amsterdam, Eindhoven, The Hague
- Belgium	:	Antwerp, Brussels
- Germany	:	Cologne, Frankfurt, Essen
- Italy	:	Milan, Rome
- Switzerland	:	Zurich

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- Two agencies are in operation, one in Ireland and the other in Switzerland (Winter Partners).

SYSTEMS HARDWARE

- Apart from the Cyphernetics processing centre in Ann Arbor, Michigan, U.S.A., (to which the central concentrator in the Hague is connected), ADP-NSI's London based centre has four dual DEC K110s, each with 384K. Total on-line disc storage is 4.8 billion characters.

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PRODUCT AND MARKETING STRATEGIES

- The product strategy of ADP's timesharing division is structured around the products in hand which have been acquired through TSL and Cyphernetics. In some cases a decision must be taken where two products compete for the same market (e.g. Manager (TSL) and IPL (Cyphernetics)). The ADP name has, of course, now replaced the previous trading names of the acquisitions. ADP concentrates on servicing the large users and on the prime application areas. The Cyphernetics operating system is being offered to new accounts.

- As extension of its existing services, ADP is providing "ONSITE". A DEC 2020 with the ADP application software offers to clients the ability to run their own "in-house" time-sharing system. The strategy in Belgium is to capitalize on this product.

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COMPANY PROFILE

ATKINS ON-LINE LTD
Fourmost House
West St
EPSOM, Surrey

Tel: 03727 29678

Dr D B Chandler
Managing Director
Owned by OLS Inc
Total Employees : 202
Total revenue (1978) : $7.7M
(Total revenue (1977) : $6.9M)

ATKINS ON-LINE OVERVIEW

- Atkins, one of the largest civil/structural engineering consultancy group in the UK (turnover of $39.8M in 1976) began Computer Service operations in November 1969 with Rank Xerox Sigma 5 computers. In 1971 a Sigma 7 was added and in 1974, the Sigma 5s were replaced by Sigma 9s. In the same year the seven UK offices were added to with the opening of an office in The Hague, Netherlands. Today the total network comprises seven multiplexors, tied into the Sigmas.

- Leasco Response began in April 1970, basing its timesharing services on Hewlett Packard 2116B minis (four). It was Leasco that provided On-Line's entry into Europe in September 1975, when it was acquired for $408.000.

- On-Line itself was formed in July 1967 and initially offered Timesharing services on a GE-255. In April 1968 this was converted to a DEC PDP/10, which now has grown to a network of 18 DEC system-10s in the US and a DEC 11/40 front end processor in the UK, (four of same in the US).

- The Atkins acquisition cost OLS $2.2M in cash and 32,000 OLS shares. The combined Atkins On-Line group turnover in 1977 reached a respectable $6.0M, 60% of which was achieved in Timesharing services, 20% in Remote Batch and 15% in Batch. The OLS Oliver service contirbuted nearly $980,000 of this while the Atkins group itself provided $780,000 of internal usage. APL services, Financial Planning and Engineering services formed the remainder in roughly equivalent proportions.

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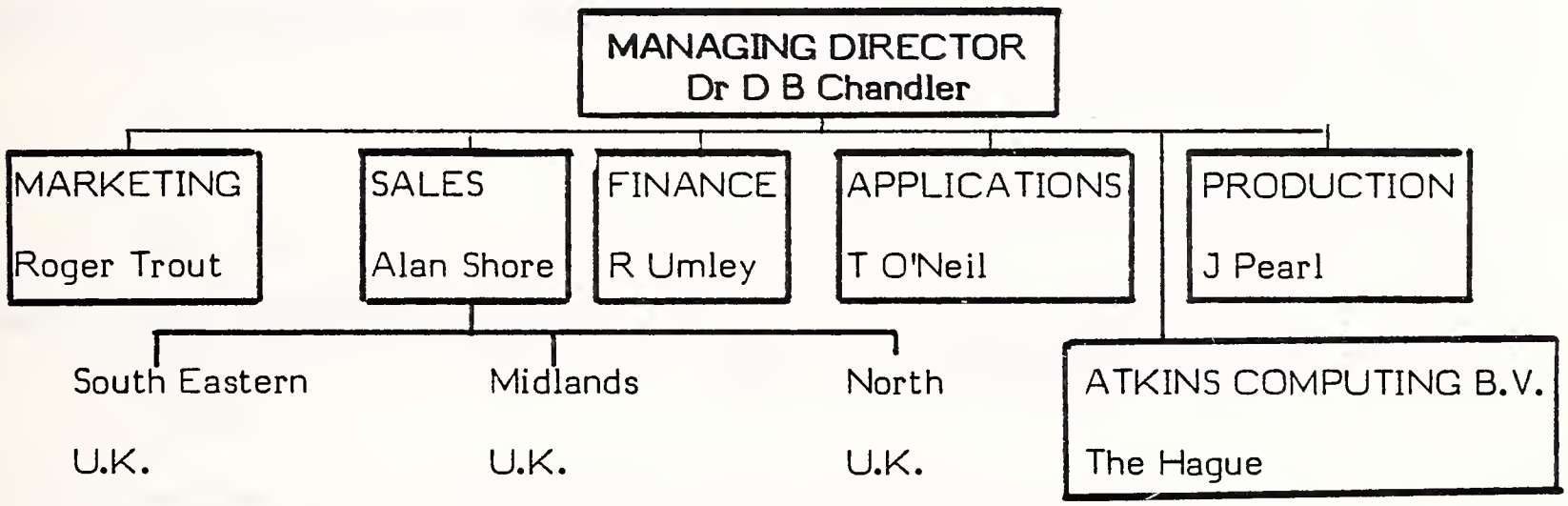
ATKINS ON-LINE ORGANISATION

- As with all major service organisations, Marketing activities are separate from Sales and Applications development is separate from Production. There is no formal Strategy/Planning group at Corporate level, however.



- The full group of offices is now : The Hague, London, Birmingham, Swindon, Cardiff, Warrington, Middlesborough, Epsom, with additional access points in Sheffield, Newcastle, Banbury, Birmingham, Leeds, Loughborough, Fareham, Bristol and Manchester.

KEY PRODUCTS AND SERVICES

- The product list is a mixture of OLS and Atkins packages but also a high proportion of programs originally developed by major clients that continued to be marketed through the Atkins On-Line network.

- Three groups of services are offered:

  - Computing Services for Management (Financial Planning, Production Scheduling, Project Control, APL Services, Information Handling, Mathematical Techniques).

  - Computing Services for Engineers (Finite Element systems, Off-shore Engineering, Mechanical and Process Engineering, Environmental Engineering and Energy Conservation, Utility programs and Programming Languages - FORTRAN/APL/BASIC)-

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- Computing Services for the Businessman (Accounting packages, Sales Order Processing, Systems Design and Development and Utility Programs). Systems Design and Development is provided for customised solutions.

- The primary tool for problem solving remains Oliver, however, which produced close on £0.5M in 1977.

SYSTEMS HARDWARE/SOFTWARE

- The hardware support for the Atkins On-Line services can, for historical reasons be divided into two groups:

  - Atkins : in addition to the old RXDS Sigma 7 now switched off and on its way out, Atkins has 2 RXDS Sigma 9s both with 128K, which are fed by asynchronous and synchronous channel controllers and 3 Interdata model 50s. These systems support FORTRAN, BASIC, RPG, APL, COBOL, CORAL.

  - OLS : in the UK, OLS has four H.P. 2116 minis, each with 32KB, and four PDP 11/40s that act as front ends to the US network of 18 DEC System 10s. The H.P. systems support BASIC, COBOL, FORTRAN and APL.

  - Terminal support is mainly teletype compatible while Remote Batch terminals can be DCT 2000, 2780 compatible or most terminals operating under HASP. telex access is worldwide.

PRICE HISTORY

- Atkins On-Line are constantly re-evaluating their current pricing scheme. While there have been no price increases in storage since April 1974, there have been computer resource unit (CRU) increases resulting in 1975, 1976, and 1977 in costs rising by approximately 4%, 8% and 5% respectively.

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The CRU itself rose from 11¢ in 1975 to 13¢ and to 15¢ in 1977.

PRODUCT AND MARKETING STRATEGY

- It is Atkins On-Line intention to enter the main European countries in the next 2-3 years, emphasizing problem solving and their strong consultancy capabilities.

- AOL has a wide variety of packages and products that have "occurred" (rather than resulting from planned developments) but they now have a very comprehensive list of packages with a good image, supported by specialized support people.

- The network will be expanced to improve coverage and support APL, CPA, Oliver and their engineering capability. The more important of the latter will be gradually converted for use of the OLS PDP 10s.

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COMPANY PROFILE

CDC Data Services/UK
Wells House
77-79 Wells Street
London W1

Tel: (01) 637 2171

J H Ward
Managing Director
Total Staff: 135

- CDC Data Services/UK is owned by Control Data Corporation and is one of the three major divisions into which CDC is split in the UK, the others being Systems and Peripherals and Financial Services and Education.

- Data Services itself is split into three divisions each offering its own service.

  - Data Processing Services:

    This is an IBM based system offering UK, Netherlands and Belgium a selection of business packages, mainly in the commercial field.

  - CALL-CDC

    This is a management time-sharing service with emphasis on the needs of top management of major companies who need to centralise information on an interactive basis. This network interfaces both with the European and US Control Data Computer Network.

  - CDC Cyber-Services:

    This is aimed at the scientific and engineering user and is a batch, remote batch and time-sharing system.

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TURNOVER AND STAFF GROWTH

- Around 30% of CDC's turnover worldwide is in the Data Services Division.
- Worldwide CDC's bureaux business produced $298M excluding programming and consultancy.
- CDC Data Services/UK has around 135 employees in UK.
- Support staff per unit turnover is above average because of the close relationship between Data Services and the Professional Services Division.
- Both turnover and staff have kept abreast of sales growth for the industry.
- The bureau is in the process of heavy staff recruitment to meet aggressive growth predictions into the 1980's.

SYSTEMS HARDWARE

- CDC Data Services CDC based services (Cypher Service) runs on an internationally linked network of 26 machines including the CDC 6600, 7600 and the Cyber 170 Series. Some specialist applications e.g. in the nuclear field can be assessed by satellite.
- The IBM based service has an IBM 360/65 (15MB) at East Barnet which is the access point for the CALL/CDC to 9 x IBM 370/158s in the US.

PRODUCTS

- Cyber Services offers over a thousand programs to address management and technical problems including structural analysis/piping/civil engineering

  Management Sciences
  Electrical Engineering

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Database Management Systems
Graphics
Transport and vehicle scheduling
Financial Analysis

- The fastest growing application is IFPS (Interactive Financial Planning System) which addresses the problem of managers communicating with their DP staff, facilitating the assessment of alternative options for managers who do not have the time to learn complicated formats.

- CALL/CDC has MINI - MIS - management database system for time-sharing usage.
- PICTURE-PAC management graphics
- TIMEPACK 11 - sophisticated time series forecasting
- PROFIT 11 - planning and budgetting.

Most of these were developed largely under contract for control data by US software houses.

- DPS has

General sales/picture ledgers
Invoicing
Stock Control
Payroll

CDC claim they will soon integrate all these applications into one package. Except for payroll, all the above packages were developed outside.

In-house systems include:

Mailing, Publishing, Subscription Accounting, Advertising, Marketing and Project Management and costing packages.

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- IN DPS application packages are said to account for only 25% of CDC Data Services/UK revenue. 50% is said to come from custom made or customised packages.

- Around 15% of revenue comes from consultancy.

- Education Services

  Control Data Institute, the educational division of Control Data Ltd provides a comprehensive range of computer training services from basic entry to the highest level of advanced technology. These services are available to industry or the general public as well as CDC.

- 90% of CDI's trainees are sponsored by the UK Government Training Services Agency under the Training Opportunities Scheme (TOPS).

PRODUCT AND MARKETING STRATEGY

- It is CDC's intention to grow with a balance of social contribution and commercial profitability.

- They intend to enhance the research, engineering, industrial and commercial capabilities of the UK, contributing to the export drive and thus balance of payments.

- Control Data's experience in Research and Development will continue to be available to UK DP users.

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COMPANY PROFILE

CDC DATA SERVICES
Rue de la Loi 15
1040 Brussels

TEL : 02.242.1080

Managing Director
L. Bartlett
Total Staff 30
Turnover 173M BF.
Input Estimate

THE COMPANY

- CDC Data Services was set up at the end of 1973. It is an wholly owned subsidiary of the CDC Corporation U.S.A. The Brussels operation began by offering the timesharing services CALL/360 and KRONOS. SCOPE another service had already been available in Rijswijk (Z.H.) for some time previously. There are associated computer centres located in London, Frankfurt, Rijswijk (the Netherlands).

KEY PRODUCTS AND SERVICES

- The main products offered in Belgium are:
  - Minimis
  - Profit
  - S2000
  - Scientific Packages
- The area covered by these services is mostly Brussels and Antwerp.

REVENUE

- Revenue earnings are fairly evenly balanced.
  - Interactive 60M. BF.
  - Batch and Remote Batch 60M. BF.
- The main customers so far have been Kredietbank and Esso, but CDC Services covers most market areas.

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COMPANY PROFILE

CDC DATA SERVICES
J.C. Van Markenlaan 5
Rijswijk

TEL: 070 - 949301

Ing T.C. Verschoor
Managing Director
Turnover FL. 12.2M
Input Estimate

THE COMPANY

- CDC Data Services, a wholly owned daughter company of CDC Corporation operating in The Netherlands with their EDP equipment in Brussels.

KEY PRODUCTS AND SERVICES

- - Standard Programming
  - Time Sharing
  - Custom Services
  - Remote Batch
  - Payroll
  - Inventory Control
  - Ceneral Accounting

APPLICATIONS

- CDC offers a wide variety of packages to general business scientific and engineering applications including:

  - Arlitron (Audience rating)
  - BTSI (Brokerage Accounting)
  - Telemony (Electronic Fund Transfer)
  - UNISTRUC (Structural Analysis)
  - PROFIT (Financial Planning)
  - MINIMIS (Data Base Management)

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INDUSTRY MARKETS

- CDC are specialist in the fields of PROCESS manufacturing to the Petroleum Industry and in the Government Financial and engineering sectore.

COMPUTER HARDWARE

- CDC 6600 in Brussels.
  IBM 360/75 in London.
  CYBER 73.

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COMPANY PROFILE

CEGOS TYMSHARE EUROPE SA
Avenue Louise 326 Bte 1
1050 Brussels

TEL : 649-6170

President
J. Blouet
Managing Director
B. Bougel
Total Staff: 9
Turnover: 24.3M BF.

THE COMPANY

- Cegos Tymshare was founded 1st January 1975 and is an wholly owned subsidiary of C.T.E. (Cegy Tymshare Europe) SA Paris.

- The branch has been managed since January 1978 by Mr. B. Bougel.

- Their revenue is mainly based on timesharing, which constitutes some 82% of earnings.

KEY PRODUCTS AND SERVICES

- FOCUS
- MAGNUM

} Data based management systems

- Express Information Analysis

- Value Added Timesharing

HARDWARE

- IBM 370/158
- XDS 940
- VARIAN 1

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COMPANY PROFILE

CISI
35, Boulevard Brune
75680 PARIS Cedex 14

Tel: 539-25-10

Patrick Nollet
President
Total 1978 Sales: $110M
Total 1978 Staff: 1440

THE COMPANY

- The Compagnie Internationale de Services en Informatique (CISI) became the EDP subsidiary of the Commisariat a l'Energie Atomique (CEA), the French national atomic energy commission, in 1972. At that time nearly all of the $23M turnover was produced by contracts with the CEA.

- Through aggressive marketing and acquisition thrusts, CISI has grown fourfold, in terms of sales, to a consolidated 1977 total of $90.5M, only 45% of which is sourced from the CEA, and 25% of which comes from (truly) international operations.

- This rapid growth has led to the structuring of CISI into three main operational groups:

  - The RTI group (Remote Computing Services) or Resuau de Traitment Informatique.

  - The TIG group (Batch processing) or Traitement Informatique de Gestion.

  - The ERI group (Professional Services) or Etudes de Realisations Informatiques.

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- The CISI network already covers the UK (England, Scotland), France (most major cities) and Belgium (Brussels). CISI's large (34%) share in the biggest private software products and software services in Europe (CAP-GEMINI-SOGETI) complements CISI's own, in-house system implementation capabilities. Combined, the two companies from easily the largest Computer Services group in Europe and a powerful potential pool of resources for major projects.

AFFILIATES, SUBSIDIARIES AND HARDWARE

- A detailed list of the numerous CISI products is not possible in this limited space. It is more meaningful to concentrate on a summary of main service categories and the dominant activities of the many partially or wholly owned subsidiaries that comprise the CISI group. This is best done in the context of the three groups mentioned above: (RTI, TIG and ERG).

- Within RTI there are two main activities, structured around the two networks that cohabit within CISI:

  - the SIA Ltd Network, based on a London CDC 6600 and Cyber 72 centre with 1977 sales of $7.2M a staff of 187 and offering scientific time-sharing and Remote Batch KRONOS services.

  - CISI's own CISINET network based on IBM 370/168, 158, 145 and 360/91 75 computers in SACLAY, GRENOBLE, CADARACHE with CDC 7600, 6600, 6400 and Cyber 173 also in SACLAY, serving a number of terminals nodes. TSO, KRONOS and APL are offered in high or low speed access (from 110 baud to 40,800 baud).

- RTI yields 60% of the group's total sales, and has a staff of 590.

- Within TIG in addition to CISI's internal CISINFOR group, CISI has grouped:

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- EURINFOR in Lyon, Valence and Annecy (72% ownership), operating Honeywell IRIS 60, H115, and CII-HB 64/20 computers with a staff of 136; 1977 sales $4.5M.

- INFOR in Bordeaux, Marseille, Grenoble (80% ownership) operating IBM 360/50 and 370/145 computers with a staff of 37; 1977 sales $2.0M.

- LKS in Sarrebruck, West Germany (85% ownership) operating a Honeywell 6050 with a staff of 69; 1977 sales $6.8M.

TIG yields 20% of the group's total sales and has a staff of 440.

- ERI groups CISI's own CISILOG division, and:

  - TRANSTEC (60% owned by CISI, 40% owned by BRANDON APPLIED SYSTEMS INC., USA)

  - INFORMATIQUE INTERNATIONALE (100% owned); a small Paris-based systems house with staff of 21 and a 1977 sales of $0.95M.

  - GIXI (100% owned) with two subsidiaries of its own (transport and medical systems consulting); staff is 180, equipment is a CDC 3300 and 1700; 1977 sales were $6.4M.

  ERI has a staff of 410.

- In addition to these holdings, CISI owns a 50% share of CMSI, a MOROCCO-based RCS, Batch and Professional Services company; CERG-BATIPROGRAMME (34% share), a Paris-based systems consultants group specialising in apartment building management and CAP-GEMINI-SOGETI (34% share).

- CISI intends extending the network coverage to West Germany and Morocco.

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KEY SERVICES

- CISI's predominant strength is in Scientific and Technical processing as a result of its history of involvement with the CEA, research laboratories, engineering groups, the petroleum industry, aerospace etc. CISI's prime T/S language is APL.

- However, an increasing ability in general business processing (essentially Batch-based) has enabled CISI to offer, on the one hand, standard programme products for administration/financial processing (payroll, Inventory Control, Financial management, personnel management, Bookkeeping, Sales Accounting, Invoicing); and on the other hand custom-developed single programme or integrated systems for individual user needs.

- General Business applications include:
  - CISCOMPTE (General Accounting)
  - CISPAIE (Payroll)
  - Personnel 2000 (Staff Management)
  - CISMUN (local Council/government management suite)
  - ECOFI (banking administration)
  - stock processing library
  - medical file processing (database oriented)

- Database systems include:

  - System 2000 (Batch/transaction-oriented) which can be used with COBOL or FORTRAN programmes or through a unique language.

  - IMS-DLI (Batch Interactive) for extra large databases in COBOL or PL/1. A terminal management system allows high volume, simultaneous interrogation from remote terminals.

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- The scientific/technical group of services is very diverse. It cannot be extensively listed here, but includes programmes for information processing on:

  - public works/engineering
  - aerospace project
  - nuclear centre construction
  - off-shore oil platforms
  - tanker stress
  - CAD projects (initially computers now electronics industry)
  - NC projects (APT language, IFAPT, PROMO and routing library).
  - real time/automisation
  - cartology/geology and related areas.

SALES AND GROWTH

- Over the five years to 1977 the sales of CISI S.A. have grown by a factor of 2.8, from $24M to $68.25M. From 1975 onwards, however, the CISI group has grown faster.

SALES	1973	1974	1975	1976	1977
CISI S.A.	24.3	42.0	51.9	61.6	68.25
Consolidated group	-	-	65.4	76.8	90.5
of which CEA			55%	55%	45%

STAFF	402	871	1262	1278	1430

- Profitability has been growing slowly but is still only 4% of sales.

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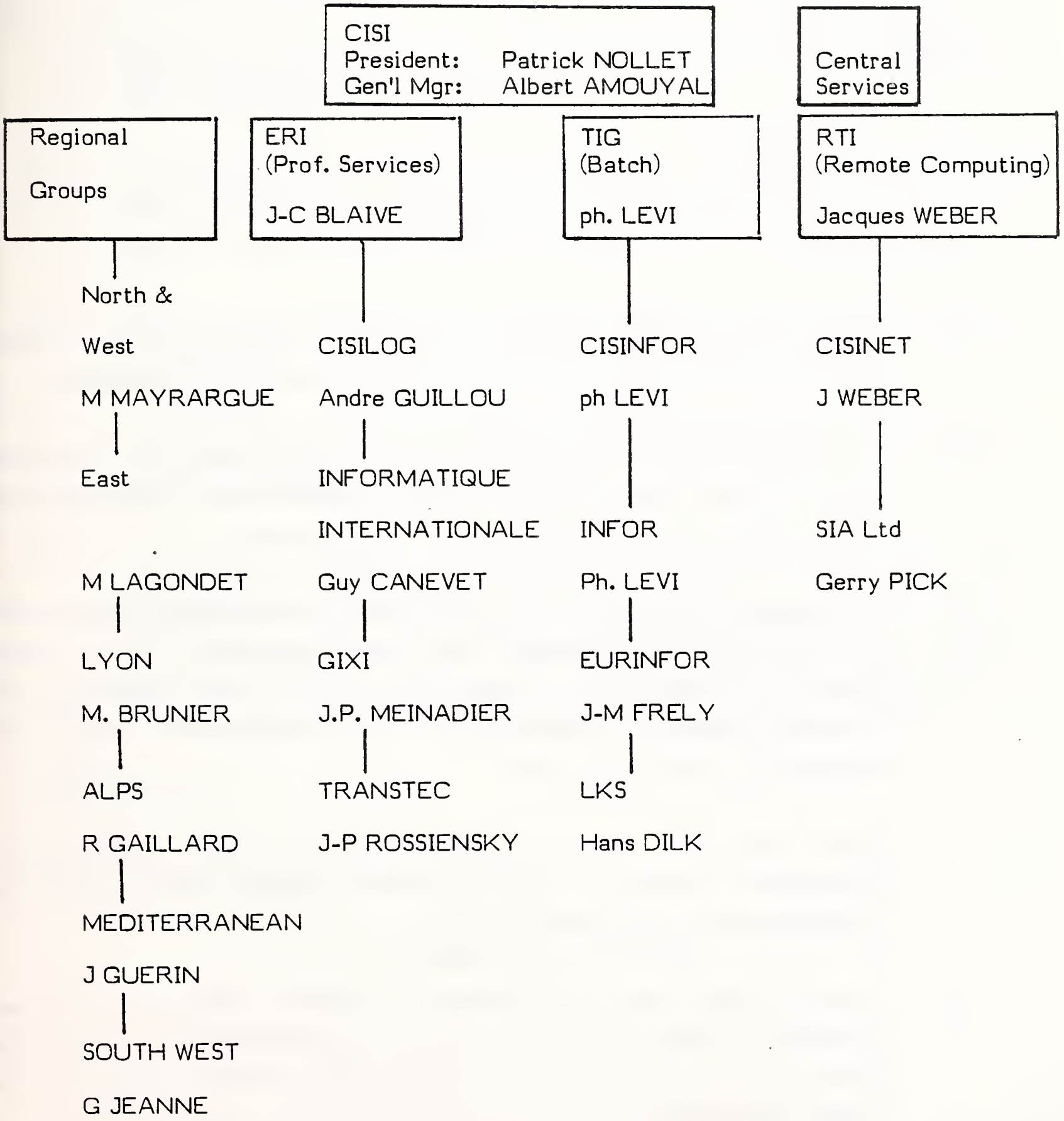
ORGANISATION

- The current organisational structure is as follows:



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COMPANY PROFILE

CMG (Computer Management Group) Ltd
Group Head Office
Croydon, CR0 1EH
Surrey

Tel: (01) 688 2261

N.J. Scholfield
Managing Director
Total Turnover (1978): £8.5M
Owned by: Employees
Total Staff: 450

THE COMPANY

- During the year 1977/8 the CMG Group increased its turnover by a further 25% and a corresponding improvement in pre-tax profit was also achieved.

- Recruitment improved in the second half of the year suggesting that expansion should be easier during 1978/79. CMG's pre-tax profit margin improved slightly leading to a significant increase in pre-tax profit.

- The expansion of the last two years was marked by the establishment of CMG's third Dutch operating company, CMG Midden-Nederland BV. The further growth in data processing services, which bring CMG into contact with ever increasing numbers of customers, still further improved the stability and continuity of the Group's business.

- CMG remains one of the few computer service companies independent of Government influence and the influence of companies whose interest lies outside Europe or the computer industry.

- In the UK there was a very significant improvement in the productivity and profitability of CMG's software business and substantial data processing sales were made which are already adding significantly to their turnover in the current financial year.

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- A particularly important event has been the introduction of the PAYFACT Works Payroll Service in the UK, where when processing began in April 1978 100 payrolls and 10,000 people used the service in the first few days.

- Customers have "on-line" access to CMG's central computers via terminals in their offices connected by telephone lines.

- The developments CMG has made has resulted in customers deciding to use CMG's on-line bureau services instead of acquiring a new computer and even in replacing their computer with those services.

- CMG's software business has expanded, insurance and banking playing a significant part.

- Continental expansion of the mini-computer business has been a large area of expansion for CMG.

- CMG ordered substantial enhancements to their UK computer centre. This will enable them to operate all their on-line services in the UK from one data centre, based on the success of their Scottish RJE installation which has given their Glasgow office the facilities of a large computer at a reduced cost. A new computer has also been ordered for the Amsterdam computer centre.

ORGANISATION

- CMG is located as follows:

CMG Computer Management Group (UK) Ltd
Sunley House
Bedford Park
Croydon CR0 2AP Surrey

Tel: 01-681-7631 - N.J. Scholfield, UK General Manager

CMG Computer Management Group (Southern) Ltd
Sunley House
Bedford Park
Croydon CR0 2AP, Surrey

Tel: 01-686-8251

CMG Computer Management Group (Scotland) Ltd
Highland House
58 Waterloo Street
Glasgow C2

Tel: 041-221-8193

CMG Computer Management Group (Middlesex) Ltd
Westway House
320 Ruislip Road East
Greenford, Middx UB6 98W

Tel: 01-578-4563/70

CMG (City of London) Ltd
Eastgate
73 Leman Street
London E1 8EY

Tel: 01-481-3881/9

CMG (West End) Ltd
Sunley House
Bedford Park
Croydon CR0 2AP, Surrey

Tel: 01-686-8251

- In Europe CMG's offices are in Holland, three in Amsterdam and one in Rotterdam; Brussels in Belgium and Frankfurt in West Germany.

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TURNOVER AND STAFF GROWTH

- CMG has grown from a company of around £350,000 annual turnover and 100 staff in 1967/8 to one of around £8,500,000 and 450 in 1977/8.

SYSTEMS HARDWARE

Mainframe

Burroughs	B1700, B2500, B2700, B6700
CDC	600, Cyber 73/28
English Electric	DKP10, KDF8
Honeywell Bull	62/40, 66/10, H1200, H2200, H3200, H58 H6000, H400
IBM	1410, 360/20, 360/40, 370/125, 370/135 370/158, 370/168
ICL	2903, 1902, 1903
NCR	200, Century
Siemens	4004
Univac	1106, 9200
GE	415

Mini

Burroughs	B80, B741, B771, B776 B7-SID, TC500 TC3500, L2000, L3000, L5000, L8000, L9000
Datapoint	2200
Datasaab	D15, D12, M10
IBM	System 32, System 3, Models 6 - 10
Kienzle	6000
Litton	1241
Logabax	LX4000
NCR	399, 499
Nixdorf	620, 8870, 8835, 8845
Olivetti	DE525, A5, A7
PDP	11/40

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Philips	P350, P410, P440, P450, P850
Siemens	7730
Texas Instruments	Silent 700
Ventek	Datapoint

PRODUCTS AND SERVICES

- CMG can provide efficient business and administrative systems from simple payroll to complete administration. Some of the major aspects of the services CMG provide are listed below.

- Computer Consultancy

  Here CMG can offer a wide range of experience on different kinds of computers and organisation. Consultants implement systems on both CMG's and their customers' computers.

- Systems Analysis and Design

  CMG provides this service to three main groups of clients:

  - Existing computer users who require systems or system amendments but have insufficient systems and programming capacity.

  - New users - particularly of the new minis - who need systems developed for their business but do not wish to establish full-scale systems and programming teams.

  - Organisations which do not wish to become involved in running and operating a computer but would like data processed on CMG's own computers.

- Individually designed data processing services (also standard systems).

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- Facilities Management.

  CMG will take this over either on the customer's premises or their own or the customer's work can be transferred to CMG's premises.

- Generalised Systems

  CMG's business was founded on a generalised service giving complete business accounting and management information.

- Specialised "package" systems.

  CMG have established a particularly large base of experience which has been incorporated in this area.

PRODUCT & MARKETING STRATEGY

- CMG expect to continue their present rate of expansion and to achieve a further improvement in margins.

  During the coming year CMG hope to see a further growth in sales of between 20/30% per annum and a further improvement in profit margins.

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COMPANY PROFILE

CMG NEDERLAND B.V.
Laan van Kronenburg 14
Postbus 159
Amstelveen
The Netherlands

TEL: 020/45.72.51

General Manager
Mr. W.N.J. Koppers
Turnover: f 23.3M (1979)
(Est.): f 30 M (1980)
Staff: 200

THE COMPANY

- The CMG (Computer Management Group) group first started trading in the Netherlands in 1968. Since that time four operating companies have been set up in Holland:

  CMG Amsterdam B.V.
  CMG Rotterdam B.V.
  CMG Amstelveen B.V.
  CMG Den Haag B.V.

  These four companies are subsidiaries of CMG Nederland B.V.

- The business consists of consultancy, software development and bureau services. Software services are offered on a wide range of equipment including mainframes, small business computers and minicomputers. An increasing percentage of work is done in the area of consultancy, advising clients on the selection and implementation of small and mini-computer systems.

- Approximately 50% of the turnover is in tailored software development projects. CMG Amstelveen B.V., for example, specialises in such work for the banking industry.

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- Bureau services are based on Burroughs equipment. A new computer has been installed for the Amsterdam centre, and is shortly to be upgraded.

- Overall sales in the Netherlands increased by around 30% in the last 12 months. This continues the growth of the previous two years. Profitability has also increased, as this expansion has taken place.

- CMG Nederland B.V. is a wholly-owned subsidiary of CMG (Computer Management Group) Ltd., the U.K. holding company.

HARDWARE

- Bureau services are run in batch and timesharing modes.

- Equipment installed consists of:-

  - Burroughs — 3 x B 3800,
  - 1 x B 771 RJE.

- Like the U.K. companies of the CMG group, the Dutch companies operate a terminal network (approximately 50 terminals) consisting of User Site Hardware systems of the following types:

  - VDUS or serial printers
  - Datapoint 1500
  - Texas Instruments TI 742.

KEY PRODUCTS AND SERVICES

- CMG concentrates on commercial data processing to the virtual exclusion of scientific and technical applications

- Important application areas are:

  - accounting for sales, purchase and general ledgers,
  - payroll and personnel records,
  - inventory and stock control
  - manufacturing systems,
  - membership subscription records,
  - banking and other financial institutions.

- Specific products exist for:

  - payroll (PROCESS and PAYFACT),
  - investment management (BAS and INVEST II),
  - financial management (FACT),
  - inventory/stock control (CENDIS),
  - subscription administration (ONEX),
  - motor dealer accounting (GAS),
  - banking (INTABS),
  - royalty accounting (TRACS).

MARKETING STRATEGY

- CMG offers a range of services broad enough to cover most commercial applications with software and/or processing services. This entails a flexible approach to customer requirements.

- Complementary to this sales policy is an organisation and management structure designed for flexibility. The front line interface with the customer is the CMG Customer Service Group, consisting of a manager and his team of consultants, who have the authority to draw on both local and group resources where necessary. This structure ensures flexibility and quality.

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- CMG is by deliberate policy a mixed services vendor, that is, both a service bureau and a software company. In Holland, CMG employs 100-120 software development staff, 50% of whom are engaged on small business systems work. CMG ranks in the top three software houses in the country.

- Involvement in projects such as the SWIFT banking network, have led CMG to the position of being a multi-national services vendor operating in the European national markets.

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COMPANY PROFILE

COMSHARE LIMITED
32-34 Great Peter Street
London SW1

(01) 222-56-65

Ian McNaught-Davis, Managing Director
Owned by Comshare Int'l B.V.
Total employees: 215 (U.K.)
Total computer service sales fiscal year end 1978: $17M (£8.5M)
Total computer services sales fiscal year end 1977: $10.88 million

---

OVERVIEW

- In Western Europe Comshare Ltd has grown dramatically since its inception in 1971, initially through competitively priced interactive services, then by the gradual addition of data base management services such as COMPOSIT 77, QUESTOR and TACTICS, then through the third party lease from EPS Consultants of the financial modeling system FCS (which is now used in the U.S. also), and the provision of information data bases (e.g. the PTT tariff data base, the crown copyright census data "-Site-" and the Extel U.K. company data).

- The status of Comshare Ltd. is now that of the prime supplier (though not the largest) of on-line services in the U.K., having largely superceded the stage of simple provision of timesharing. As a result, competition is becoming more and more remote as the services provided become more and more unique. An increasing proportion of business is gained through the integration of industry specialists into the front-end sales effort in the corresponding sector, creating a very respectable image for the company.

- A huge effort has been expended in "hand-holding" and initial systems training of clients who are taught Comshare services and systems, not timesharing techniques. This is beginning to pay dividends now.

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- Revenue is mainly produced by encouraging heavy usage of the systems available and not by charging heavily for storage. This is almost the complete reverse of ADP-Network Information Services.

- Comshare is making an effort to focus its resources on specialized markets and applications, maximizing the value-added of each service provided. They take a high profile on things they are good at, actively discouraging those services that they feel are not worthwhile in the long term, (e.g. non-specific timesharing).

- The company is highly people-oriented and attracts many spontaneous job applicants due to its increasingly good image. They do not hire from the services industry, in general, preferring to increase their industry specialist staff who are then trained intensively (three months).

- This increasing specialization, to a certain degree, insulates the company from the competition.

COMSHARE LTD. (UK) ORGANIZATION

- This is structured around, and in support of, a highly specialized marketing and sales structure, emphasizing the growing dedication of Comshare Ltd. to industry-specific services and products.

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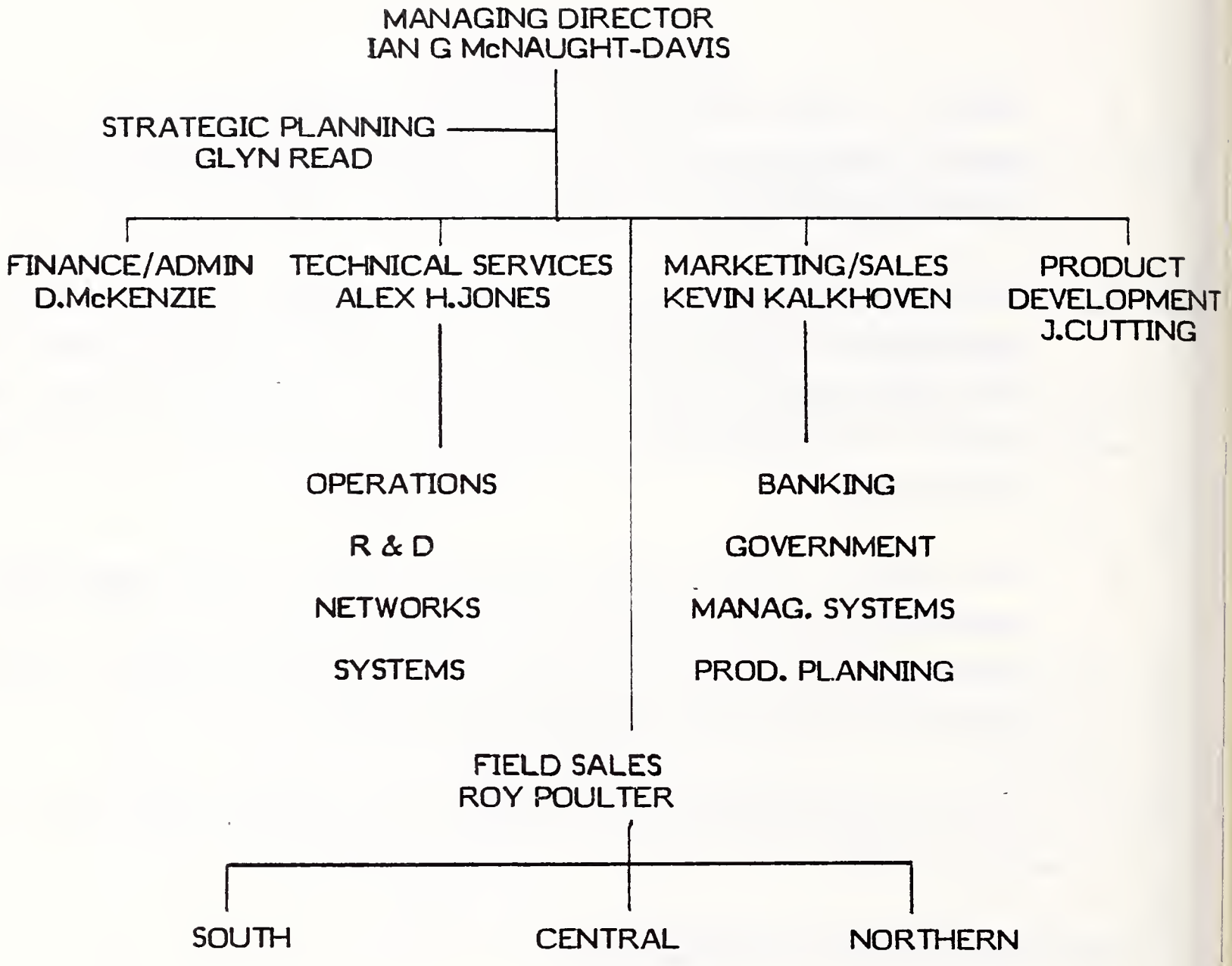

U.K. STAFF AND GROWTH

- The U.K. headcount has risen dramatically:

1975	139
1976	170
1977	215
1978	

- Revenue has kept pace with this:

1975	$ 4.84M
1976	$ 7.14M
1977	$10.88M
1978	

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KEY PRODUCTS AND SERVICES

- COMMANDER 1, Comshare's initial timesharing technology, went live in 1967. (It was sold to Telesystemes in France, who also holds the COMMANDER II license in France). It is supported by ten Xerox 940's in the U.S. Comshare, Inc. has an IBM System/360 Model 50, and give dual Commander II Systems in Philadelphia.

- Comshare Ltd. (U.K.) has been committed for some time to being number one in the financial planning sevices market but is now broadening its horizons to choose other markets and become the best in those markets. Comshare Ltd currently has five Xerox Sigma 9s which will be expanded to six by the end of 1978.

- COMMANDER II is now the only technology offered in Europe, with large C-II systems based on Xerox 9s located in Ann Arbor, Michigan, (U.S.A.), Toronto, Ontario (Canada), and London (U.K.). The Tokyo (Japan) center is not connected to the network. Each center supplies power to the national market and is linked to the other centers through the AMBASSADOR service. Large engineering "number-crunching" applications are run on a CDC 6600 in U.S. Steel that ties into the network.

- The network (TELEGRID) is minicomputer based, (90 Interdata 1 50s of which 25 are in the U.K.)

- Comshare key product areas are:

  - Financial planning (DATAFORM, FCS, PLANMASTER)
  - Data management systems (COMPOSIT 77, TACTICS, DATAFORM)
  - Materials management (BOSS)
  - Engineering design/scientific (SDRC, IMSL)
  - Personnel reporting and analysis (QUESTOR)
  - Proprietary data bases (SITE, TARIFFICA)
  - Foreign exchange (FEAMIS)

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COMSHARE INC., USA

- The Comshare Inc. parent company situated at 3001 South State Street, Ann Arbor, Michigan, is a public corporation traded over the counter, employing 450 employees in the U.S. Primarily a remote computing services vendor, Comshare, Inc. had the following growth and U.S. sales over the last three years.

FISCAL YEAR ENDING 6/30	U.S. SALES	GROWTH (%)	AFTER TAX EARNINGS (before extraordinary credit)
1975	$12.3M	-	$0.76M
1976	$13.8M	11.4	$0.72M
1977	$18.2M	32.9	$1.475M
1978	$25.6M	42.0%	$2.582M

Earnings per share on income before extraordinary credit rose 53% in 1977 from $.95 to $1.80 per share with average outstanding shares 1,800,000.

- Unconsolidated FY 1978 overseas revenue from affiliated companies brought total revenues to $44 million. Equity in earnings of affiliated companies was $529,000 in 1978 compared with $66,000 in 1977.

- Comshare Inc. leases its office and computer facilities.

- The company has funded joint development of a replacement cost accounting system with Valuation Systems Corp and subsequently acquired VSC in December 1977.

- In 1975 after Xerox's demise from the computer business, the range of depreciation lives of the computers and communications equipment was extended from 3-10 years to 3-12 years, but the salvage value was cut from 20% to 5%. Software and systems development costs are charged against earnings in the year incurred.

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U.S. KEY PRODUCTS AND SERVICES

- Comshare Inc. speciality products include:

  - COMPASS, generating over $4 in revenues. It provides professional accounting service to acounting firms. It is used by over 1,600 accounting firms, including 28 of the 30 largest CPA firms in the country. Comshare Inc. has been selected by the American Institute of CPA's as the source of professional national program library services. Functions performed include general ledger, project accounting, internal time and billing, staff scheduling, auditing, and tax processing.

  - 4.1.1. Systems for Telephone Equipment Inventory and Number Assignment, generating over $3.5 million. Designed for telephone companies, it balances central switching office traffic and manages, assigns and forecasts central office equipment. It is used by six of the nineteen Bell Telephone operating companies and by two of the ten major independent telephone companies.

  - Human resource management software, PRO/FILES and EBS, generating $2.3 million revenues. PRO/FILES is a human resource management system designed for personnel managers to create inventories of empoyee skils, perform statistical analysis, forecast manpower requirements, and prepare reporting information required by the EEO and Affirmative Action. EBS is a product for employee benefit record keeping and administration and is sold primarily to corporate clients and banking institutions.

  - Comshare's PARSEC financial products and services, including its replacement cost accounting software, VSCOM-190, generate over $3.0 million in revenues.

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U.S. APPLICATIONS REVENUE

- Speciality applications are Comshare's primary source of domestic revenues in 1977, as shown below:

	1977 $ U.S.	% Total U.S. $
Speciality	$ 8.8M	48%
Data Base Management	5.8	32
Utility	3.6	20
	$18.2M	100%

In 1978 specialty application were running at 59% of revenues.

- Comshare markets to a wide variety of industries. Its industry-specific accounting and telephone company and trust administration product lines, along with two industry-independent personnel and financial product lines, generated approximately 59% of 1978 revenues. Remaining revenues are derived from generalized and data management services.

COMSHARE LTD (UK) STRATEGIES

- It has been expected for some time that Comshare must replace its ageing Xerox hardware with one of the major mainframe manufacturers. Initially, IBM System/370 hardware was examined, followed more recently by future series.

- Comshare Ltd (UK) has also decided that the main revenues growth must come from applications, not from increased volume of processing time sold. The result will be a drive towards specialization of applications offered to specific branches of industry where they feel that they have in-house competence in the form of consultants with long experience in that field (and not necessarily technical competence in T/S).

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- Pricing strategy is, therefore, to offer value-priced services, not cost-priced services. In 1978 prices will not change.

- Marketing/salesman staff turnover is small -3%.

- In 1978 growth is targetted at 47% over 1977, twice revised upwards from earlier estimates of 38%.

COMSHARE LTD UK
FINANCIAL ANALYSIS

	£100		
	1975	1976	1977
TOTAL REVENUE	£2,468	£3,641	£5,550
- Overnight Batch		128	400
- Interactive Services		2,900	4,250
- Remote Batch		200	250
- Belgium		128	200
- Holland		285	450
Pretax Profits	102	367	1,151
Current Assets	745	1,248	1,310
Current Liabilities	734	859	1,509
Current Assets/Liabilities	1.01	1.45	0.87
Employees	139	170	215
Revenue/Employee	17.76	21.42	25.81

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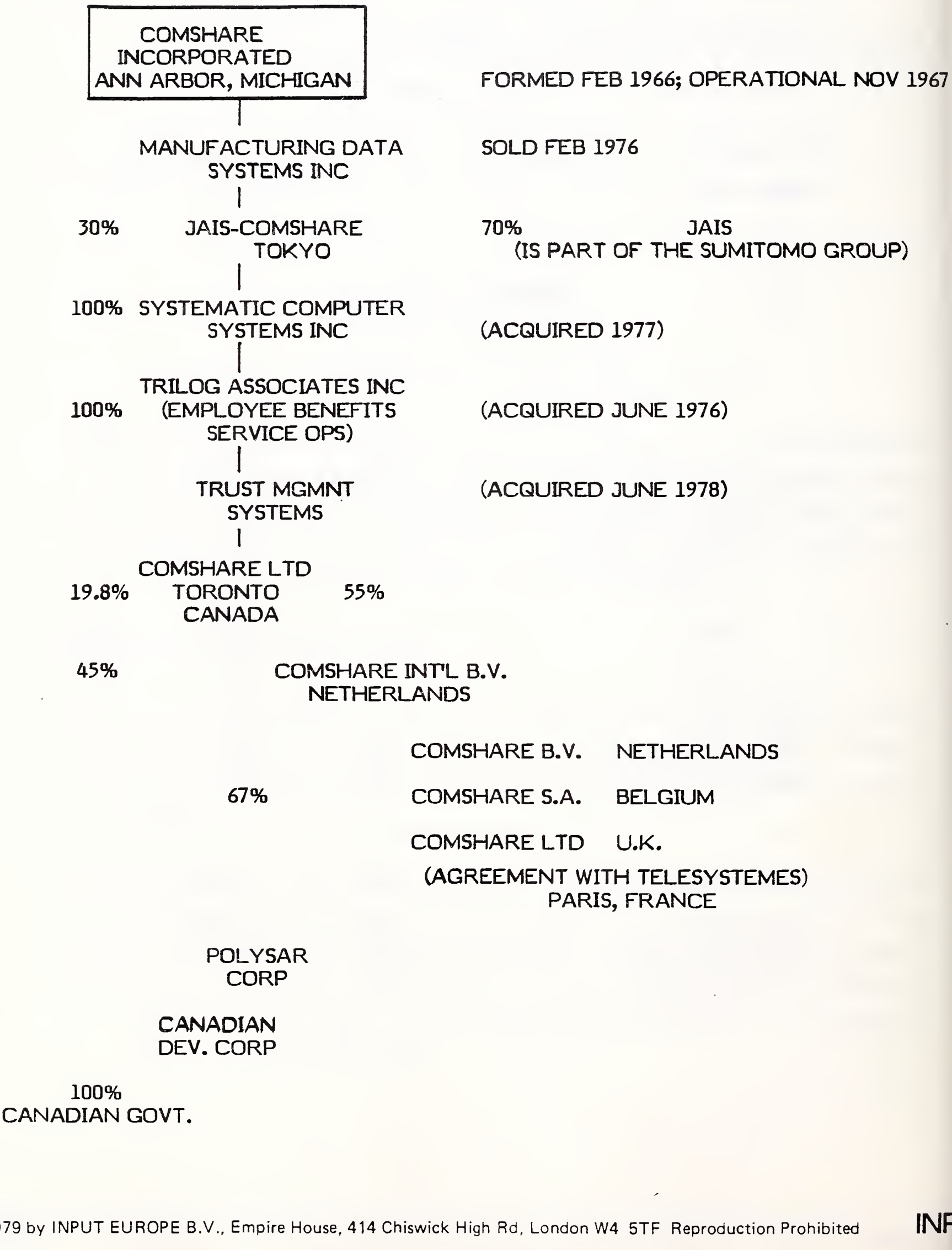
COMSHARE WORLDWIDE



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MANAGEMENT DIRECTORY

COMSHARE INC

Directors

Richard L. Crandall
President and Chief Executive Officer
COMSHARE Inc.
President, Managing Director
COMSHARE International BV

Stanley R Day
Capital Investments Consultants
Chairman of the Board
Champion Home Builders

W John Driscoll
President, Green Valley Holding Co
a private investment company

Glenn V Edmonson
Director, Bio-Engineering, The University of Michigan

Richard P Eidswick
Senior Vice President, COMSHARE Inc

Brian Sullivan
Partner in Dykema, Gossett, Spencer Goodnow & Trigg, Attorneys-at-Law

Officers

Richard L Crandall
President and Chief Executive Officer

Robert G Boylan
Vice President, Marketing

Donald J Devine
President, Trilog Division

Richard P Eidswick
Senior Vice President

Robert W Nolan
President SCS Inc

T. Wallace Wrathall
Vice President, Finance & Administration
Secretary, Treasurer

Jesse W Caravello
Vice President, Operations

Jerome A Chessler
Vice President
Corporate Development

Martin P Hoffman
Vice President
Research & Development

Ronald E Jeffries
Vice Presidnet
Language Development

Paul L Jones
Vice President
Financial Product Services

Michael E McCorry
Vice President, Western Sales

Donald J Walker
Vice President, Eastern Sales

James G Wyllie
Corporate Controller

General Legal Counsel
Dykema, Gossett, Spencer
Goodnow & Trigg
Detroit, Michigan

International Legal Counsel
Baker & McKenzie
Chicago, Illinois

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MANAGEMENT DIRECTORY (contd)

Auditors
Arthur Andersen & Co
Detroit, Michigan

Transfer Agent & Registrar
National Bank of Detroit
Detroit, Michigan

Associate COMSHARE Operating Companies

COMSHARE Ltd
Toronto, Canada

Derek G Price
President

H Roger Kirby
Vice President, Marketing

Ronald A McKerron
Chief Financial Officer

Karl K Rose
Vice President, Technical

COMSHARE Ltd
London, England

Ian G McNaught-Davis
Managing Director

Alex H Jones
Technical Director

Kevin Kalkhoven
Director

David MacKenzie
Financial Director

Roy Poulter
Director

COMSHARE SA
Brussels, Belgium

Ian G McNaught-Davis
Managing Director

Kevin Kalkhoven
Director

COMSHARE BV

The Hague, Netherlands

Ian G McNaught-Davis
Managing Director

Roy Poulter
Director

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COMPANY PROFILE

COMSHARE S.A.
Rue des deux Eglises 7
1040 Brussels

TEL : (02) 511.3800

Mr. E. Somerling
Director
Revenue: (1978) 26.1 MBF
Staff 11

THE COMPANY

- The Company was formed in March 1974 by Comshare International B.V. (Netherlands), itself an offshoot of Comshare Inc. The Belgian company has established itself on the same pattern as other Comshare companies in Western Europe, and in Belgium is now a major supplier of on-line services.

STAFF AND GROWTH

- Since the start of the Company in 1974, staff has risen as follows:

1975	:	5
1976	:	6
1977	:	8
1978	:	11

- Revenue has kept pace with this:

1975	:	7.5 M. BF.
1976	:	11.0 M. BF.
1977	:	16.0 M. BF.
1978	:	26 M. BF.

1979 growth is targeted at 80% over 1978.

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KEY PRODUCTS AND SERVICES

- Financial Planning (Dataform FCS, Plan Master)
- Data Management Systems (Composit 77, Tactics, Dataform, Questor
- Engineering Design/Scientific (SDRC, IMSL)
- Materials Management (Visor)
- Proprietary Databases (Site, Tariffica)
- Foreign Exchange (FEAMIS)
- Banking Systems (MONITA)

- COMMANDER II is now the only technology offered in Europe, with large C-II systems based on Xerox 9's located in Ann Arbor, Michigan, Toronto, Ontario and London. The Tokyo center is not connected to the network. Each center supplies power to the national market and is linked to the other centers through the AMBASSADOR service. Large engineering "number-crunching" applications are run on a CDC 6600 in US Steel that ties into the network.

- The network (TELEGRID) is minicomputer based, (90 Interdata 150's of which 25 are in the U.K.).

- Comshare S.A. has like its sister companies in Western Europe then the main revenue growth must come from applications, and not from increased volume of processing time sold. The result will be a drive towards specialisation of applications offered to specific trades of industry where they feel that they have in-house competence in the form of consultants with experience in that field but not necessarily technical competence in time sharing.

- Pricing strategy is therefore to offer value priced services, not cost price services.

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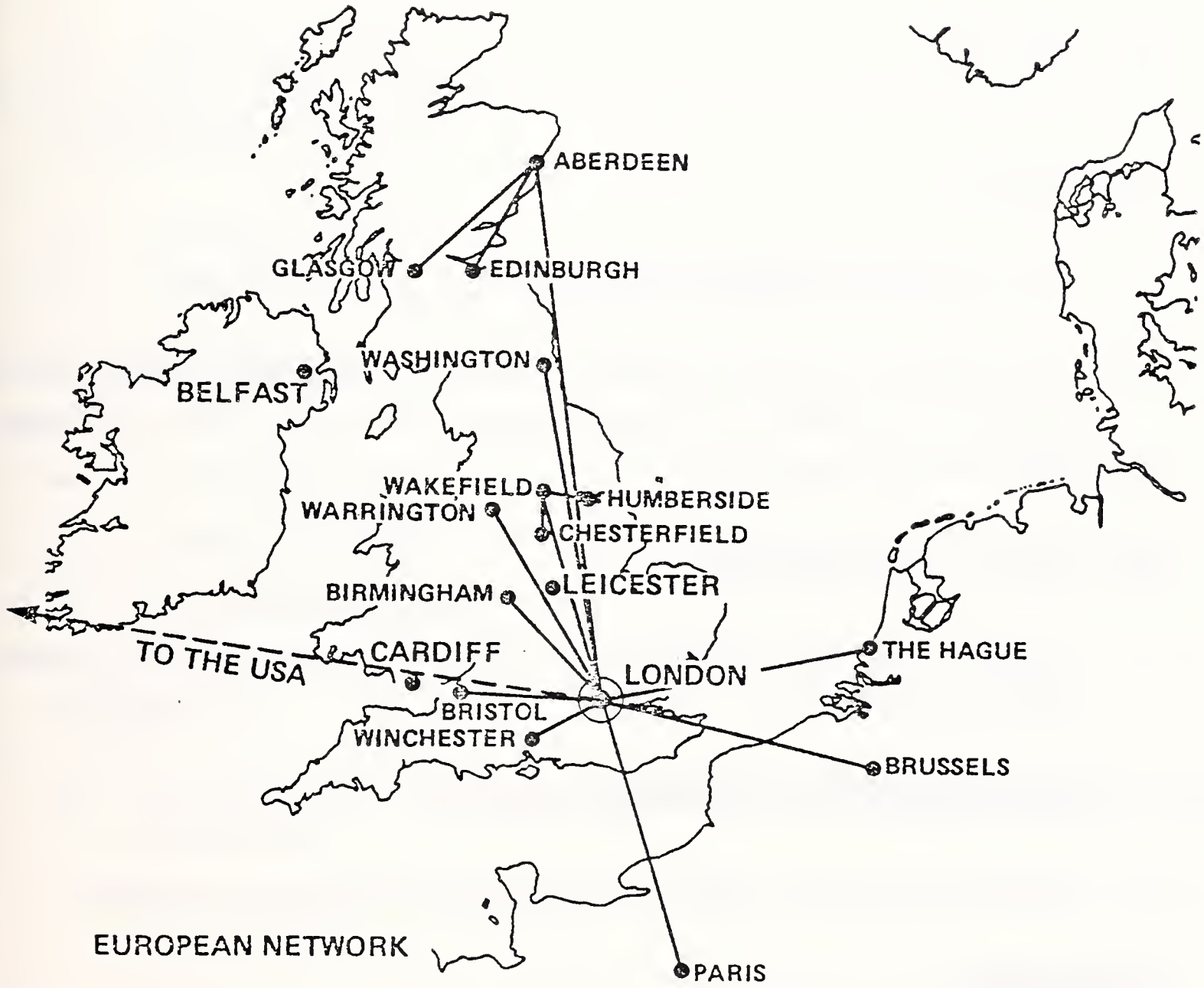
COMSHARE



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COMPANY PROFILE

CONTROL DATA SWEDEN AB
Vaestberga Alle 5
P.O. Box 42107
Stockholm 42

Tel: (08) 840200

Jan Hedman, General Manager
Ownership: Control Data Corp.
Minneapolis, USA (45000 staff)
Turnover: $2.4M (Sweden)

THE COMPANY

- The company was founded in 1969.

- Jan Hedman is General Manager of Control Data Sweden AB, and Tomo Razmilovic is Manager in charge of computer service activities in Denmark, Finland, Norway and Sweden.

KEY PRODUCTS AND SERVICES

- Consultancy services, combined with computer services, in Batch, Remote Batch, and Interactive.

- High technology software products - from USA.

- Turnkey mini computer based on site systems and Facilities Management.

APPLICATIONS

- Construction and stress analysis
- Operations Research and Mathematics
- Data Base and Accounting

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- Process Control
- Graphic Data Processing
- Production and Stock Control
- CAD (Computer Aided Design)
- CAM (Computer Aided Manufacturing)
- Computer Education

GEOGRAPHIC COVERAGE

- All nordic countries.
- Network connections with data centres around the world.

MAJOR CUSTOMERS

- Industrial companies
- Government bodies
- Educational institutions

HARDWARE

- CDC 6600 (x2) - at present; however, from 1st April 1979 - CYBER 175 and CYBER 171.

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COMPANY PROFILE

CONTROL DATA - CYBERNET SERVICES
Tour Gamma A.
195, Rue de Bercy
75582 Paris

Tel: 345-50-45

Data Services Manager: J.P. Lange
Total Staff: 150
Total Turnover: $24.7
(Input Estimate

THE COMPANY

- Cybernet services began in 1965. They are operated as a division of Control Data France and bureau services are now interconnected across Europe by networks.

ORGANISATION AND STAFF

- The organisation chart shown as Annexe-A indicates a line reporting relationship between J.P. Lange, who is responsible for CD's data services in France and J. Carnesecca, the country manager for CDC France. Matrix management is practised, which means that Lange also reports to D. Speidel who is functionally responsible for European Data Services. The French operation has 150 staff, more than half of which are technical.

HARDWARE

- There are eight processing centres across Europe and a Cyber 175 is planned for the UK in about 1980. The chart on the next page shows the position in the Western European area:

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	Computer Centre	RJE	Local Tel. CDC Access
Austria (Vienna)	-	1	1
Belgium (Brussels)	1	1	1
Denmark (Copenhagen)	-	1	1
France	1	1	1
Finland	-	1	-
Germany	1	10	6
Greece (Athens)	1	-	-
Israel	1	1	-
Netherlands	1	1	1
Norway	-	2	1
Sweden	1	6	2
Switzerland	-	1	1
United Kingdom	1	4	3
	8	30	18

- Outside this area, there are six mainframe centres in the USA, two in Australia and one each in Mexico, Brazil and Canada.

- Hardware rationalisation is taking place in 1979 and plans exist to standardise on the Cyber 175 as the following table shows:

Location	Hardware	Comments
Paris (Rungis)	Cyber 74	175 by end 1979
Frankfurt	Cyber 175	
Stockholm	Cyber 175	July 1979
The Hague (Rijswick)	Cyber 175	Dec. 1979
Brussels	Cyber 174 & 175	2 x 175 from Dec. 1979.

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NETWORK AND TERMINALS

- The networks of the USA and Europe are interconnected by Satellite link which terminates in Europe in the Hague. The profile in Section 2 shows the relative strength of CDC in the European countries with Germany, Sweden and the UK being the best served countries.

- The network in Europe is interconnected with six processing centres in the USA by means of a Satellite link and the network in all the European countries put together. In the USA there are 44 RJE centres and 110 towns with local telephone access to interactive services. There are also network facilities in Brazil and Canada, but no links outside these countries. Australia has a link to Wellington New Zealand where there is an RJE centre.

KEY PRODUCTS AND SERVICES

- The Brussels centre is the nearest location to France for large scale batch processing with its cyber 174 and 175 machines. The Cyber 174 runs under scope 3.4 and the Cyber 175 provides the NOS based interactive service primarily to the UK, Italy and Belgium. When the Cyber 175 is installed at Rungis in June this year, interactive services in France will link to Rungis instead of to Brussels.

- The Applications listed in the brochure are classified as follows and in the following order:

  - Structures
  - Civil Engineering
  - Pipe Stress Analysis
  - Energy
  - Electrical/Electronics
  - Planimetry and Plotting
  - Operations Research & Mathematics
  - Statistics and Time Senes

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- Vehicle Routing
- Database Management
- Management & Financial Planning
- Banking & Stock Market Applications
- Accounting

- The order of these applications is probably indicative of their importance in commercial terms.

- Service Availability

  Normally 5½ day week to noon Saturday and 10 p.m. most nights. Sunday working is not usual but can be arranged by special request. There is an overnight service for RJE customers.

MARKETING

- The marketing strategy is to provide on one operating system (NOS) both batch and interactive services based on the CYBER 175. Though perhaps only half as powerful as the CDC 7600, the Cyber 175 NOS operating system is the future base on which CDC plans to evolve its Applications development. Thus Scope is being phased out as far as bureau services are concerned and this affects the availability in future of up-to-date CDC developed applications on the CDC 7600 machines.

- The main marketing thrusts for CDC data services are:

  - Database (System 2000)
  - Structural Analysis and Engineering
  - Financial Planning IF PS

- The emphasis of CDC on the NOS operating system for the Cyber 175 for both batch and interactive working is highly significant for Scope operating system users. CISI and FRANLAB will no doubt watch these developments of CDC software policy most carefully.

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CDC

ORGANISATION CHART

CDC Western Europe & Middle East
E. J. OTIS

CDC France
D. G. FAMILIANT

Country Manager
J. CARNESECCA

Data Services Brussels
D. SPEIDEL

CDI Southern Region
H. DEBOURIERE

Personnel & Facilities
J. SCHMITT

Data * Services
J. P. LANGE

Finance & Administration
F. LEBOEUF

O&E/BPO
C BARATHON

Technical Support
H. GAILLARD-GROLEA

F D P Market Operations
J. M. LAPORTE

Engineering Services
E. BRANGER

Administration
P. CEUGNIET

Professional Services
M. GARDET

Sales
J. P. LANGE

22-2-79.

*Staffing: Total of 1

COMPANY PROFILE

CSC UK Computer Services Company Ltd.
20 Savile Row
London W1X 1AE

Keith Nichol
Managing Director

Tel: (01) 437 3043

THE COMPANY

- Financial Year 78 was a year of significant accomplishment for CSC world-wide, with both revenues and profits rising to new highs for the third successive year.

- CSC has achieved its current success primarily through internal growth, rather than acquistion.

- The company believe that the computer industry provides a broad opportunity for CSC's combined internal growth and for external growth as well, though a selective acquisition program of companies that have achieved initial success and that can benefit from CSC's experience.

- One of these acquistions was a UK company - Economic Models Ltd - which provides economic analysis and forecasting series through its large economic data bases and computer models of national economies, major industries and markets of the leading industrial nations of the world.

- Worldwide CSC has around 10,000 employees.

ORGANISATION

- CSC UK is a subsidiary of Computer Services Europe, owned by Computer Services Corporation.

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- CSC group has offices in Zoetermeer, Holland, Frankfurt, Munich and Brussels and has access points in Paris, Hamburg, Madrid, Barcelona and Milan. They have joint ventures in South Africa and Australia.

- CSC UK will be opening an office in Birmingham in January 1979.

TURNOVER AND STAFF GROWTH

- This is not separated for UK or Europe.

SYSTEMS HARDWARE

- All of CSC's European offices are linked by satellite to 20 Univac 1108's in the States. These are being upgraded to 1100/80's.

- The London office will shortly be receiving a COMTEN 20 Remote Concentrator.

PRODUCTS AND SERVICES

- For financial reporting purposes CSC classifies its activities in two major categories: Contract Services and Data Services.

Contract Services

- These are performed to a client's contractual specifications encompassing such activities as the development of custom-designed communications systems, operational support of a client's technical activity, consulting in high technology areas.

- CSC wrote LACES (London Airport Cargo Entry System)

- CSC are involved in Defense contracts.

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- CSC's main strengths are in total project management and system implementation in a wide range of hardware, including minis.

- They have had contracts involving distributed processing.

Data Services

- This consists of proprietary services such as INFONET, which are marketed to numerous clients, transaction services for a specific industry or market and other data base oriented or applications oriented computer services.

- INFONET: This operation has provided CSC's major element of growth. It is a Remote Processing Service and provides a wide range of products which people can use on terminals in their own office, by telex or on remote batch terminals.

- The operating system on Univac is proprietary, designed from the ground up to be a remote processing system (CSTS). It has complete file independence and has full interactive to batch capability.

- Within CSTS there are five major product areas:

  - Database Management Systems (MANAGE - which is a CODASYL standard relational database)

  - Financial Management Systems (FLARES - which is a financial modelling and planning system).

  - Science and Technology - e.g. electronic circuit analysis, structural analysis programs, programs for the petro chemical industry and micropressor cross-assemblers

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- Management Sciences - Project Control Systems (SPRED - which is an easy-to-use precendence network PERT system MISTER -which is very comprehensive resource scheduling system).

- Graphics (ENCORE - which is a full graphics stand alone package, and also a comprehensive set of sub-routines which can be incorporated into user programs).

- CSC has written software for practically every computer manufacturer.

PRODUCT AND MARKETING STRATEGY

- The formulation of a Special Data Services Group last year provides the management structure and resources that will enable CSC to best pursue the many opportunities existing for profitable growth in the $4 billion (worldwide) market for data services. Such services, involving remote problem solving, transaction processing and similar functions in which CSC is highly experienced constitute the fastest growing area of the computer services industry. Well equipped with a sales organisation to market such services, and with a data communications network capable of delivering them to client's offices, CSC is in a very good position to grow internally with INFONET and to diversify into new services and markets.

- CSC is actively pursuing opportunities for third party suppliers of software and databases.

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COMPANY PROFILE

DATEMA Gesellschaft fur Datenverarbeitung mbH
Lyoner Strasse 44-48
6000 Frankfurt 71
(0611) 666917

Branch Office: Kurfuerstenstr 7
4000 Duesseldorf

Claes Falk
DATEMA AB, Stockholm
(Axel Johnson Group)

THE COMPANY

DATEMA GmbH represents in West Germany the remote computing and professional services of Datema AB of Stockholm. Remote computing services are offered through branches in Frankfurt and Duesseldorf in the form of time sharing/remote job entry, interactive systems and data bank systems. Professional services include systems analysis and programming and client consulting.

Datema AB has a European wide staff of approximately 800 and an annual volume of $100 million (1976). Approximately 85% of the volume is for clients outside of the Axel Johnson Group. Datema AB was founded in 1964 as a subsidiary of NORDSTJERNAN SHIPPING COMPANY. Datema GmbH, Frankfurt, was founded in 1974.

KEY PRODUCTS AND SERVICES

- Chief applications of Datema's systems are for:

  - annual budget preparation
  - budget control
  - short and long-term forecasting
  - Price calcualtions
  - Cash Planning
  - Management Reports
  - Investment Analysis
  - Capacity Planning
  - Profit & Loss Analysis
  - Portfolio Management
  - Project Control

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- Programmes offered include those supplied by IBM, Datema's proprietary programme and the most important of the licensed programme.

- BUSTER is an interactive system for computing and displaying the results of short-term alternative actions on the user's pro-forma profit and loss statement. Values for variables such as prices, costs, sales volumes, productivity, days receivable, internationsl currency rates, etc., are stored in tables and combined with changes for a given run. The tables are arranged to suite the user's company, geographic or product line organisation. The accounting periods are likewise definable. Revenue, cost and cash flow statements are produced. The package can:

  - be expanded to include the user's trial balance and financial analysis systems
  - be integrated into the user's accounting system to reflect actual data
  - contain actual budget figures as well as actual accounting data to produce comparisons of actual vs planned budget results

- DORIS (Datema Order Information System) is a modularly constructed system whith the following application functions.

  - Inventory control
  - Order Entry
  - Order Statistics
  - Billing
  - Accounts Receivable
  - Sales Statistics

  The package is supported by local batch, remote batch, remote interactive and distributed processing.

GEOGRAPHICAL MARKETS

Datema's computer centre in Stockholm can be reached in West Germany through concentrators in Frankfurt and Dusseldorf. Other pick-up points in the communications network are located in Apeldoorn (Holland) Kopenhagen, Oslo, Helsinki and Malmo, Goetgorg, Karlstads, Avesta, Norrkoping, Stockholm (Sweden).

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INDUSTRIAL MARKETS

- Datema's clients come mainly from the following industries:

- Heavy Industry	- Management Consultants
- Banking	- Public Accountants
- Insurance	- Air Transportation
- Government	- Co-operatives
	Research

HARDWARE

- IBM 370/168 4MB, MVS
- IBM 370/158, VM with CMS, McGill, OS, VSI

Programming language mainly used are BUSTER, VS-APL, FORTRAN, PL/1, COBOL, BASIC, RPGII, MARKII.

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COMPANY PROFILE

GEISCO LTD
114-118 Southampton Row
London WC1 5AB

Tel: 01 242-5725

Mike Culyer
Managing Director
Total Staff: 450
(Input Estimate)
RCS Revenue (1978): £11.5M
(Input Estimate)

THE COMPANY

- Geisco Ltd was formed in the UK as part of a new world-wide company, General Electric Information Services Company, set up jointly by General Electric Company of the United States and Honeywell Information Systems Incorporated. The name Geisco has been adopted to avoid confusion with General Electric of the UK which has no connetion with the US Company.

- The new company is 84.1% owned by General Electirc and 15.9% by Honeywell.

- GEISCO will simplify administrative and operational procedures for Mark III usere in the UK. Under the new arrangement Honeywell Network information Services offices become General Electric Information Services premises. Honeywell staff have been transferred to the new company.

- Honeywell Information Systems, one of the world's largest computer manufacturers has marketed the Mark III service in the UK and Europe since 1970. GEISCO was set up in 1978 to market the service in response to a rapidly growing demand.

- Clients in the UK number over 1000, ranging from very large to small sized users in all industry areas. These include:

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Cammell Laird Shipbuilders Ltd
Rank Xerox
IBIS Cybernetics Ltd
The Midland Bank
British Airways Cargo
Guy's Hospital
Liberty Life Assurance Co Ltd
Town and City Properties Ltd
Berlei (UK) Ltd
Hoover Limited
Borg Warner
Dunlop Polymer Engineering
Westbury Estates Ltd
Atlantic Container Lines Services Ltd
Rock Fall Co Ltd
Tootal Ciba-Geigy
National Carriers
Craig Gardner
Trentgrore (Format) Ltd
Institution of Chemical Engineers
Continental Oil Co (Conoco)
L'Oreal Group
British Airports Authority
Vandewal Ltd
Peugeut Group S.A.
Grampian Holdings Ltd
The Mitsui Bank Ltd
May & Baker Pharmaceutical Division
Cummins Engine Co Ltd
GKN Fasteners Ltd
Marine Midland Bank
Volvo Corporation of Sweden
Westbrick Ltd
Sound Attenuators Ltd
The International Civil Aviation Organisation
The Law Society
Bulk Shipping Division
General Motors Corporation
Van Allan Ltd
Polaroid

KEY PRODUCTS AND SERVICES

- The MARK III NETWORK INFORMATION SERVICE, pioneered in 1963, is a world-wide information processing network and the world's largest source of commercial computing power, linking over 600 cities in 25 countries in 21 time zones and accessible 24 hours a day.

- Based on three computer supercentres, two in the United States and one in Holland, and remote communications links, the Mark III Service is accessible on over 90% of the world's business telephones. Users connect a terminal to the network by dialling a local telephone number of the nearest access point.

- Applications span the whole spectrum of business disciplines:

  - preparing and implementing business plans
  - cost analysis
  - financial consolidations
  - cash management
  - inventory control
  - position reporting
  - market anlaysis
  - sales forecasting
  - manpower and resource planning

- A benefit of the Mark III service is its ease of use. The non-technical retrieval and reporting languages are tailored to the needs of the user so that is can be used by people without specialist training in the use of computers.

- Mark III is a variable-cost service with special cost control features allowing the regulation of the system usage by project, person, time period or pound amount.

- Data security facilities are very high and access by staff can be limited to the information which is relevant to their particular function.

- The new 3/24 intelligent terminal provides a fully integrated package of data entry, validation, storage and reporting facilities in conjunction with the Mark III NIS. It is mainly suited for the large and medium sized users and provides easy user access and job control for batch processing as well as interactive access to the timesharing network.

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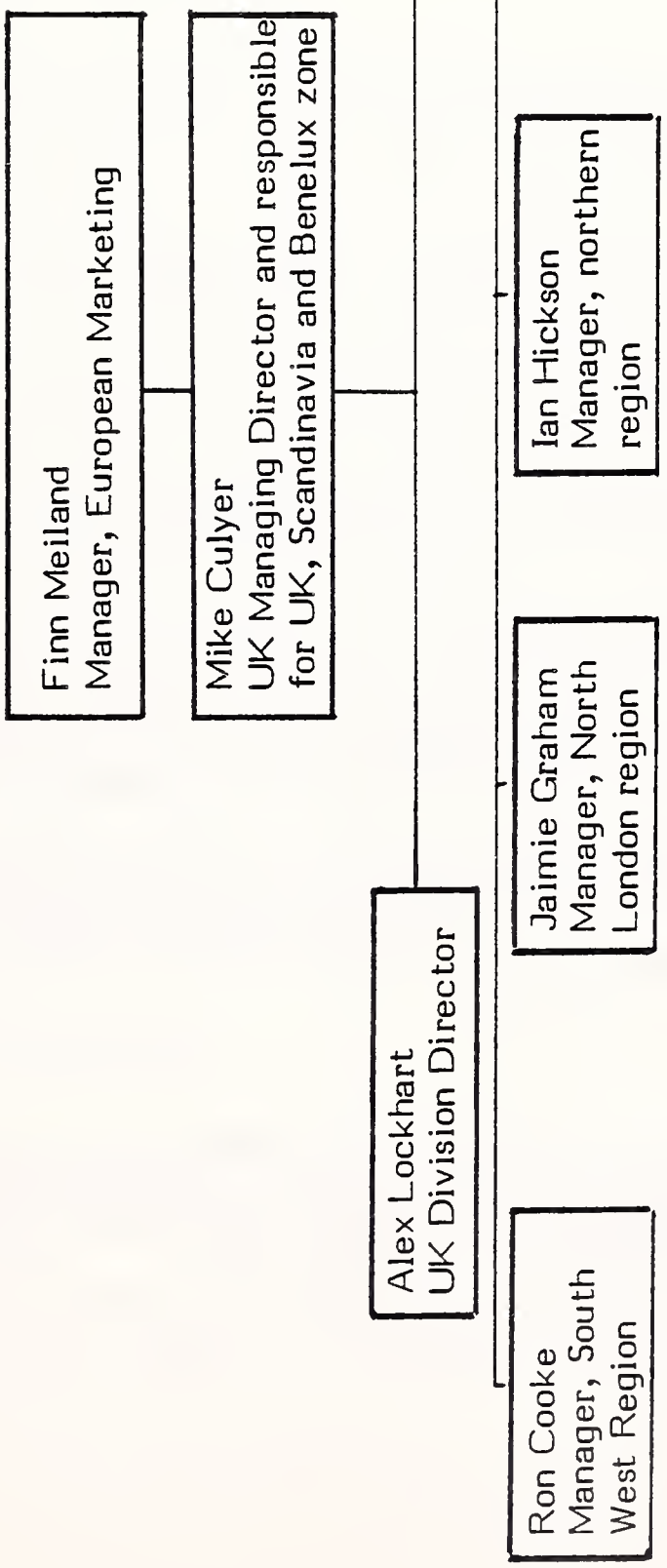
THE U.K. ORGANISATION



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COMPANY PROFILE

GENERAL ELECTRIC INFORMATION SERVICES SA.

Tour Atlantic
9280 Paris La Defense

Tel: 776.44.92

President : B. Cavaille
Total Staff: 120
Total Turnover (1978): $14.5 (Input Estimate)

THE COMPANY

- General Electric Company (USA), in conjunction with Dartmouth College (USA) initially developed a time sharing service based on the GE 200 series computers. This service "MARK II" was one of the first, commercially available timesharing services in the mid sixties and it moved quickly to the UK and Europe as the market for time sharing developed.

- When GE withdrew directly from the computer business, Honeywell Bull became the distributor for Europe in 1972. In 1976 there was a merger between Honeywell Bull and CII (CII-HB). Simultaneously a new timesharing company (HB-NIS) was formed, mainly to avoid letting the timesharing interests of GE becoming controlled by the new (French) owners of CII-HB. The new company operated until January 1979 when GE acquired control and established the new name "GEIS".

- The ownership today is GE 84% and Honeywell 16%. The president (Mr. B. Cavaille) of the French company reports to the European headquarters in London (see organisation chart attached).

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- The Mark III GECOS system was the result of the fusion of the Mark II time sharing software and the GECOS operating system (developed originally for high security military applications on GE-600 series computers). Since the network for time sharing was established in the sixties, it has grown very rapidly.

ORGANISATION & PERSONNEL

- The basic structure is set out in some detail as Annexe-A. It can be seen that the total staff in France numbers 120 with some 50 staff providing technical sales support, 20 in marketing and sales directly, a further 12 concerned with operations management and 8 in the internal finance and accounting function.

HARDWARE

- The hardware is organised into three interconnected "Supercentres" located in Cleveland, Rockville and Amsterdam. These three centres house sixteen H 6080 mainframes, an IBM 370/158 and an IBM 3033 (undergoing acceptance tests and intended to replace the 370/158 in October 1979). The IBM equipment uses the OS/VS2 Operating System.

- In Europe there are six principal concentration centres: England (2), Italy France, Germany and Scandanavia.

NETWORK & TERMINALS

- The great strength of the GEIS network is the fact that more than 500 towns can access the network across 14 countries and 4 continents. The design of the network gives good back-up features and low telephone line costs for many users who can obtain the advantages of local call costs to a GEIS node (access point).

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- The access points are :

Country	Number of Access Points
France	22
UK	16
Germany	11
Italy	10
Holland	4
Sweden	3
Belgium	3
Austria	2
Norway	2
Switzerland	2
Ireland (Republic)	1
Finland	1
Denmark	1
Spain	1
Total	79

- In addition to these locations, plans exist to extend the service to Venezuala and Brazil and to enhance the existing service at Jeddha.

- Terminals supported vary according to one of four basic network speeds.

50 baud	Telex	200 baud
201 baud	low Speed	300 baud
301	medium Speed	1200 baud
1201	high Speed	4800 baud

- The telex service supports telex and teletype terminals. For speeds from 100 to 300 bauds the Terminet 30 or 300 is the standard terminal, the Terminet 30 having the advantage of a full 132 print position carriage. Both are for asynchronous networks in half or full duplex mode.

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- The Terminet 1200 has a maximum carriage width of 120 characters but can print up to a theoretical speed of some 120 characters per second using a 1200 baud line. Four models of Plug compatible asynchronous visual displays are suggested (Hazeltine 2000, Data Speed 40, Data Point 3300 and Tektronix 4012).

- The high speed service (1200 - 2400 baud) is called "MCS" (RJE in IBM parlance). Supported RJE terminals include IBM 2780, Data 100, MDS 2400, Honeywell G115 Series 700 and SVENA-DSI. Also supported as terminals are IBM 360/370 mainframes with OS or DOS and suitable controllers (2701, 2703, or 3705). Experiments with a new TI terminal - the Mark Link System (MLS) are in progress.

- In France, GEIS claim to be supporting regularly have more than 400 interactive terminals on-line during normal business hours.

KEY PRODUCTS AND SERVICES

- Many of the commonly found time sharing facilities are available:

  (a) Wide range of languages and several versions of some (FORTRAN, COBOL, ALGOL, BASIC, PL/1, Assembler)

  (b) database software (DMSII, HISAM)

  (c) statistical routines (STATSYSTEM II)

  (d) Graph Plotting (PLOT II)

  (e) Financial Modelling (Tabol II, FALCON FORECAST, MAP, FORCES STATSYSTEM)

  (f) Mathematical Modelling (MPSS)

  (g) Specialist Banking Applications

  (h) Specialist Salary Planning & Personnel Management Applications

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- Most significant by their absence are references to the more complex scientific and engineering packages (e.g civil engineering, stress analysis, electrical circuit design, plant simulation). The emphasis is on time sharing for corporate planners, management scientists and commercial systems analysts. The service has less appeal for research workers with complex science and engineering problems to solve. However, GEIS has obvious advantages for multinational organisations wishing to access common data-banks from different countries.

- It should be noted that users are limited to maximum file sizes of 5 Mch in Foreground mode on Mark II and 90 Mch in Background mode. Thre is little emphasis on the IBM services, (and GEIS staff seem to know little about them).

Service Availability

- Services are normally 24 Hours, 365 days per year, but 22 hours per day is the limit of guarantee in contracts. Up-time is said to be 99.5% (of availability) or better and restart/recovery time is said to be a maximum of 10 minutes.

MARKETING

- Support services are grouped both by geographical zones and by industry specialties. On the organisation chart Functions marked 'D' are geographical territories whilst those marked 'B' are industry specialties. These are as follows:

o	B12	Banking and insurance
o	B13	Electrical, Aeronautics, Electronics
o	B21	Services, Conslutants, Hotels, Travel
o	B22	Heavy Industry, Cars, Steel
o	B23	Chemical, Petroleum, Food & Beverages

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- Historically, the GE Mark II service was widely used for the development of relatively small programs requiring small processing storage, small files and not involving a great many instructions. Although the Mark III service offers much enhanced facilities, the emphasis of advertised applications expertise still indicates a tendency to use the system for commercial problems rather than engineering or scientific applications.

- GEIS has strenght in simulation and statistical work connected with Banking, Production, Finance/Treasury and Personnel. All of these problems typically involve small databases but often quite complex structures.

- The GEIS facilities offer a good range of database software and interactive working methods, and conversely little emphasis on the use of terminals capable of handling large volumes of data.

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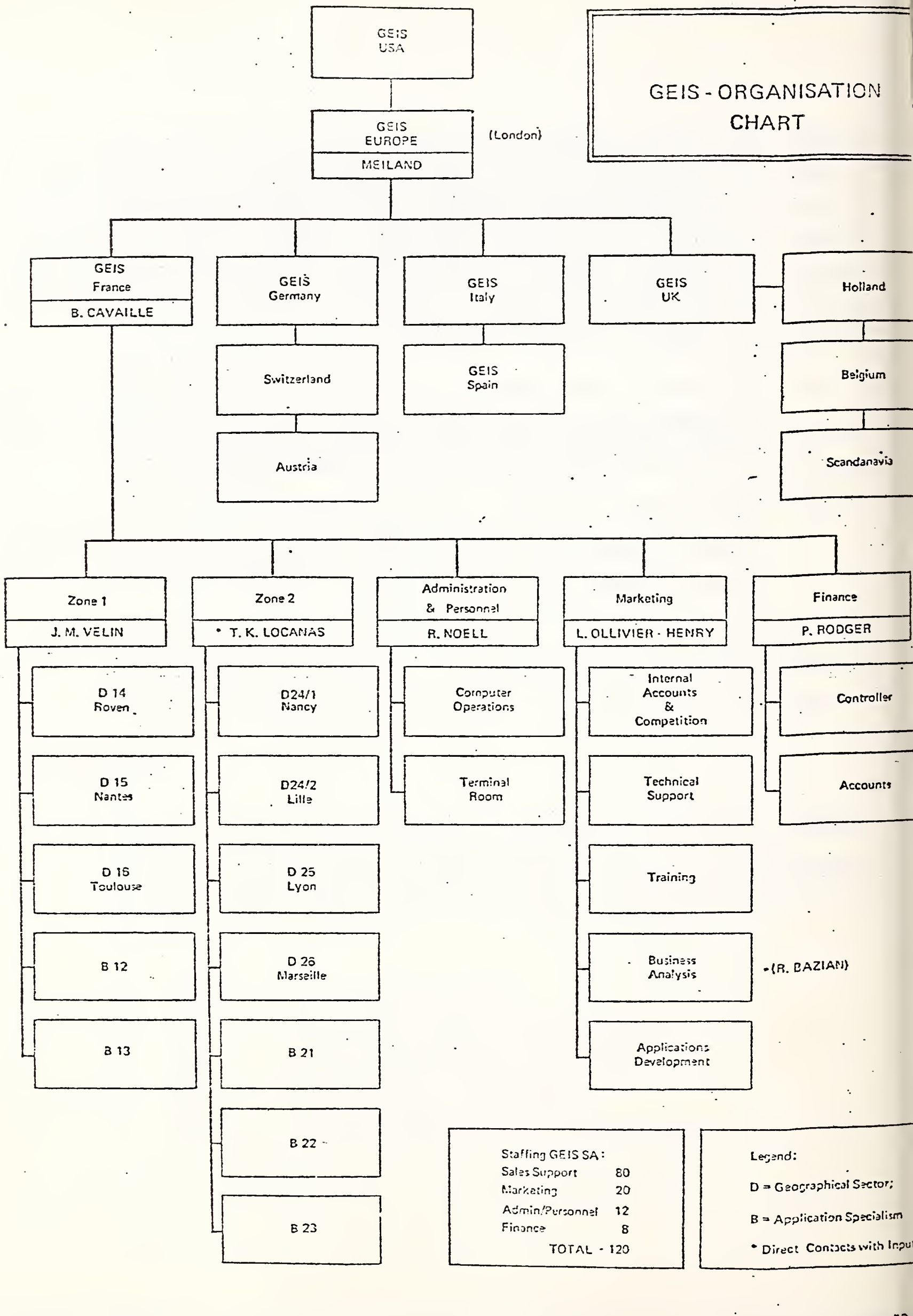
GEIS - ORGANISATION CHART



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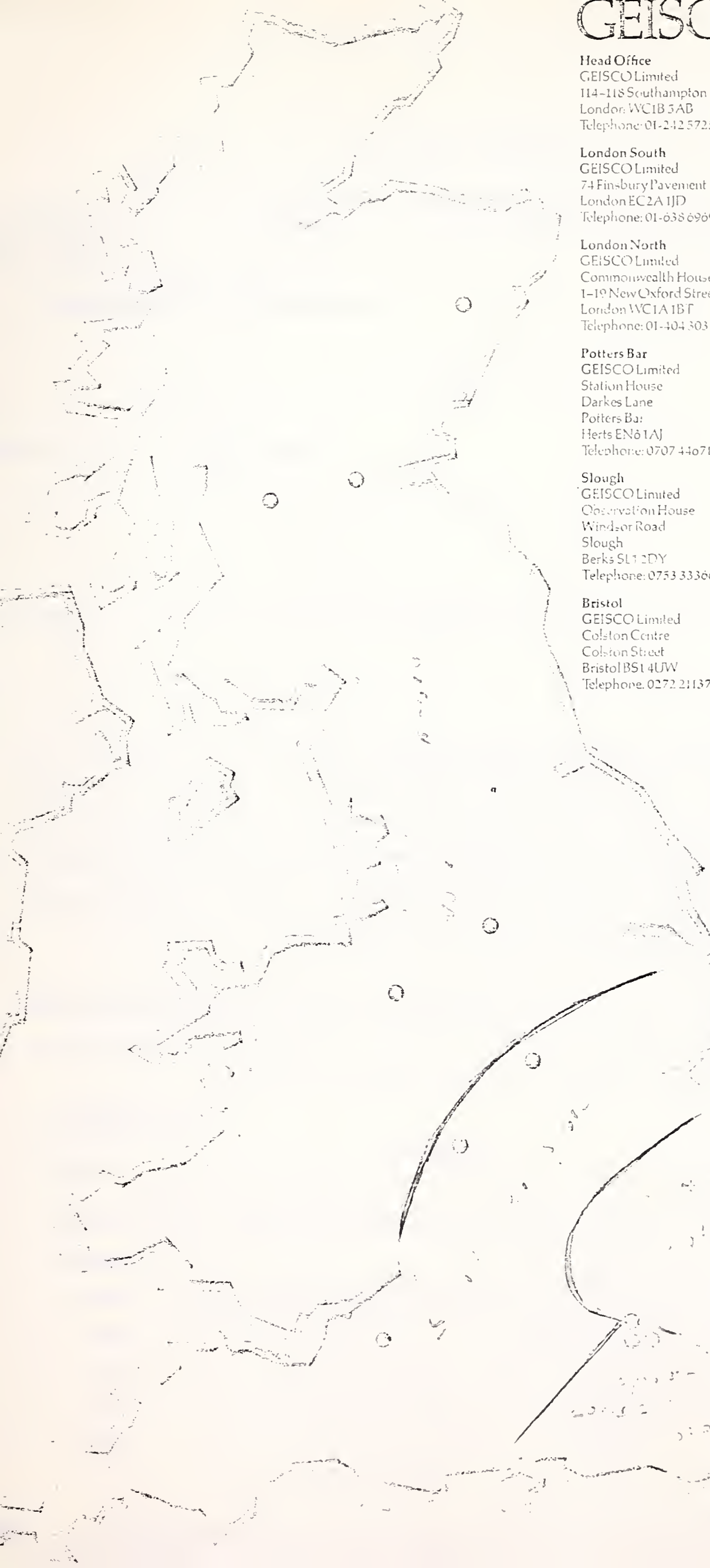
GEISCO in Britain



Head Office
GEISCO Limited
114–118 Southampton Row
London WC1B 5AB
Telephone: 01-242 5725

London South
GEISCO Limited
74 Finsbury Pavement
London EC2A 1JD
Telephone: 01-638 6969

London North
GEISCO Limited
Commonwealth House
1–19 New Oxford Street
London WC1A 1BT
Telephone: 01-404 3031

Potters Bar
GEISCO Limited
Station House
Darkes Lane
Potters Bar
Herts EN6 1AJ
Telephone: 0707 44071

Slough
GEISCO Limited
Observation House
Windsor Road
Slough
Berks SL1 2DY
Telephone: 0753 33366

Bristol
GEISCO Limited
Colston Centre
Colston Street
Bristol BS1 4UW
Telephone: 0272 211371

Birmingham
GEISCO Limited
Orphanage Road
Erdington
Birmingham B24 9HZ
Telephone: 021-382 3485

Nottingham
GEISCO Limited
25 St James Street
Nottingham NG1 6FH
Telephone: 0602 411559

Cheadle Hulme
GEISCO Limited
Honeywell House
Station Road
Cheadle Hulme
Cheadle
Cheshire SK8 7AZ
Telephone: 061-485 6116

Leeds
GEISCO Limited
Royal Exchange House
City Square
Leeds LS1 5PA
Telephone: 0532 38313

Glasgow
GEISCO Limited
443 Hillington Road
Glasgow G52 4ST
Telephone: 041-882 6244

Edinburgh
GEISCO Limited
49 York Place
Edinburgh EH1 3JD
Telephone: 031-557 1280

Aberdeen
GEISCO Limited
18–22 Market Street
Aberdeen AB1 2PL
Telephone: 0224-573444

Dublin
GEISCO Limited
29–31 South William Street
Dublin 2
Ireland
Telephone: Dublin 772641

COMPANY PROFILE

GSI GENERALE DE SERVICE INFORMATIQUE
127 Avenue Charles de Gaulle
92200 Neuilly

President: Jacques Raiman
Total group turnover (1979): 600MF
Total Staff: 2900 (Group)

Tel: 758-97-50

CS INFORMATIC
14 Rue Forest
75018 Paris

Director General: M. Genovesi

Tel: 292-02-77

THE COMPANY

- GSI is the second largest computer services organisation in Europe and is of French origin. The organisation is multi-national and in total now encompasses 2900 staff and a combined group turnover of 600 MF (budget 1979). These figures include a recent aquisition, NATEL, which itself is budgeted to produce a revenue of 150 MF from 900 staff. The turnover of GSI is therefore expected to be in excess 400 MF without NATEL.

- GSI was formed in 1971 from two companies, CSI and III (Institut International d'Informatique). Today, excluding NATEL, it comprises 20 subsidiaries or branches in France and seven overseas subsidiaries which are:

Country	Subsidiary	Maniframe Vendor
Italy	Elaborazione Automatica Dati (EAD)	Siemens
Germany	Datel Gmbh	Siemens
UK	GSI Limited (ex CRC Inform. Systems Ltd)	Xerox
Switzerland	GSI - Suisse	IBM
USA	GSI - USA Inc	DEC
Belgium	Interdata	IBM
Spain	Seresco	IBM

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- GSI is owned 52% by the French electrical company CGE and 24% each is held by Societe Generale and Credit Commerciale de France.

ORGANISATION & PERSONNEL

- The breakdown of Personnel is as follows:

GSI France		
Administration	10	
Sales	100	
Managers	100	
Analysts/Programmers	300	
Computer Operations	990	
	1500	
GSI International		500
GROUP TOTAL		2000

- It is apparent from these figures that the majority of revenue is derived from bureau operations rather than from the work of analysts and programmers directly. The new acquisition NATEL was approximately 900 staff. Thus GSI inclusive of NATEL was 2900 staff which will make it the largest computer services organisation in Europe in 1979.

HARDWARE

- There are in Europe some 40 substantial mainframes of significance of which 20 are located in France. The principal vendors by location are:

o	Paris Locations	IBM 370's and Univac 1108
o	Grenoble	Itel AS6
o	CRC Ltd (UK)	XDS Sigma 9's
o	Italy & Germany	Siemens 4000 series
o	Switzerland/Belgium	IBM
o	Seresco (Spain)	IBM

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- GSI is planning to phase out the Sigma 9's in use for scientific time sharing. The plan is to offer customers a choice of DEC 2020 or IBM 4300 machines to run in-house some of the applications that formerly ran on the SIGMA machines maintained by Honeywell since it took over RXDS customer base. Honeywell's maintenance agreement expires in 1983.

CS Informatic Hardware

- There are two IBM 370/155's (3 MB), one PDP11/70 operating as a front end processor to one of the 370's and an Interdata minicomputer.

- The 370's are hardware enhanced with M1 on one system and M2 plus DATBOX on the other. There are 16 tape drives, 6 x 800 MB STC fixed disc drives and a bank of Memorex (IBM 3330 equivalent) 100 MB exchangeable disc drives. In addition, there are four IBM 1403 line printers and a Data 100 terminal. A high speed back-up link is available to another 370 in Paris.

- One of the 370's operates as a real-time system providing synchronous 9600 BPS data communications facilities with vdu terminals. One major user of this facility is Renault with 20 vdu terminals installed. The other 370 is front ended by the PDP 11/70 which provides 16 ports to a synchronous network.

- Plans exist to replace the two 370/155's with either an Amdahl 470/V6 or an Itel A6. A decision is to be made shortly.

NETWORK & TERMINALS

- There is a strong emphasis on the developing time sharing network which links forty European cities including ten in the UK and six in Germany. On-line applications highlighted include seat reservations, financial consolidatiion, banking and stock exchange services and on-line supply and demand matching.

- GSI claim their network can be accessed from almost any type of terminal.

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KEY PRODUCTS AND SERVICES

- Vehicle Dealers

  GSI is helping over 600 dealers selling automobile, commercial vehicle and farming equipment with a package called IDS.

- Turnkey Systems

  "TOLAS" is the brand name for the DEC-based turnkey system produced by GSI Inc. Through GSI's subsidiary Transcomm, the TOLAS system is being applied in Europe. It is particularly designed for the distribution industry.

- Classic Accounting/Payroll Services

  GSI has considerable strengths in this area partly due to the way if has grown by acquisition from bureaux who provide the basic payroll, sales, purchase and nominal ledger accounting services. The package name ZADIG encompasses these packages. GSI operates the largest payroll service in France.

- Scientific Applications

  Computer aided design and market research analysis are two of the simili-scientific applications offered. With GSI's background, its main emphasis must be the use of science in commercial and business applications rather than in scientific approaches to engineering problems. Computer aided design is one of the exception's to this trend.

- Banking Applications

  GSI in Switzerland has developed a specialist real-time banking systems package. Some 80% of GSI Suisse's revenue comes from the banking sector.

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- Text Processing & Information Retrieval

  Using IBM's STAIRS package, a judicial database is being constructed.

- Service Availability

  24 hour service for Batch and RJE, Monday through Saturday.

  No Sunday working, except by arrangement.

  Some public holidays not worked.

MARKETING

- Of the 400 MF sales turnover for GSI (excluding NATEL) 80% or 320 MF is produced by GSI France and 20% by GSI international.

- National operations can be divided into:

		MF
-	Provincial Sales	90
-	Paris - Large Company Sales	150
-	Paris - Small Company Sales	80
	TOTAL	320 MF

- With the exception of GSI Inc, all companies are primarily general or special purpose computer bureaux. GSI Inc. is a turnkey systems house which specialises in the supply of DEC 11-based systems.

- The Belgian and Italian bureaux are classic general service bureaux providing payroll and accounting services. Seresco is one of the largest service bureaux in Spain. Datel in Germany provides specialised package services to operators. CRC in the UK specialises in scientific time sharing services.

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- Product Orientation

  - GSI's marketing strategy is firmly product orientated;they are not primarily interested in selling advice. Clients are "steered" towards package solutions as appropriate and custom tailoring is carried out where necesary.

  - GSI sees client processing as having three phases of evolution:

    Phase 1: Development of basic payroll and accounting systems.

    Phase 2: Development of "Operating" applications outside the accounts function. Examples include order processing, reservation systems and production planning and control.

    Phase 3: The re-development of accounting systems with emphasis on integration of budgets, financial accounting and management accounting. Examples include sophisticated operating statements giving budget and actual comparisons with year on year comparisons, financial plans and automatic draft budget generation. Improvements will also include increased use of on-line VDU enquiry facilities and in the 80's, more emphasis on financial planning models, financial control and decision assisting systems.

- Broadly, the belief is that the early accounting systems do little more than basic book-keeping. Now the future emphasis is on re-development of key systems to make Applications fit management and operating needs more closely. New products are required (and are being developed).

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- Rationalisation

GSI is harmonising its image, after many years of acquisition and standardising, where possible, hardware and software products. CRC, the UK subsidiary, has now been re-named GSI UK Ltd and the RXDS hardware is to be phased out and replaced with DEC 2020 and IBM 4300 series mainframes. The DEC 2020 has been selected in preference to the Sigma Compatible CP-V operating system developed by Honeywell even though this software package enables a smooth transition from Sigma series machines to the Honeywell level 66 equipment. This move follows a similar move by ADP (Automatic Data Processing) for the use of DEC 2020 systems which are fully compatible with the DEC 10 time sharing equipment.

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COMPANY PROFILE

GSI Limited
83 Clerkenwell Road
London EC1

Tel: (01) 242 0747

A Cavender
Managing Director
Total Turnover (1978): £4M
Total Staff: 220

THE COMPANY

- The initials CRC are an abbreviation of the name of the foundling company, Cybernetics Research Consultants, which is now one of four UK divisions in GSI Limited, a computer service bureau operating throughout the U.K. and part of GSI International - one of Europe's largest independent computer service bureau.

- CRC was formed in 1963 to provide consultancy on the use of computers in market research. In no time at all the company was more than just a consultancy and was carrying out data processing directly for its clients in this particular field of market research. By 1970 the Company was employing some twenty people.

- In the late 1960's the time-sharing industry was born and CRC saw this new market as an obvious area for its expansion. A Sigma 5 computer was acquired and, right from the beginning, the Company decided to develop its own operating system which it named COSMOS. Such an expansion required a large injection of capital and this was provided by the Industrial and Commercial Finance Corporation, a joint venture of the major clearing banks in the U.K. They backed the company's plans for diversification and ulitmately became its major shareholder.

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- A new company was formed to market these new services and was called Cybernet Time Sharing. The diversification was soon vindicated. In 1970 the Group's turnover was £0.2 million. By the next year it had doubled to £0.4 million and the following year increased even more, by acquisition, taking its turnover to £1.4 million.

- The acquisition was of a company known as SCAN, who in 1965 had launched the first ever commercial use of on-line computing in the U.K. SCAN stands for Stockmarket Computer Answering Network and serves the financial community by providing investment analysis and protfolio valuation of stocks and shares. This company was backed by the International Publishing Corporation, the leading newspaper and magazine publisher in the U.K. but, in 1972, IPC sold its interest to CRC which added £0.6. million to its turnover.

- The newly formed company then had three divisions and, for the first time, was referred to as the CRC Group. Turnover continued to grow and in 1973 had reached £1.9 million.

- A further acquisition was made in 1975, when CRC took over QUOTEL Insurance Services, a company providing a computer-based motor insurance and life assurance quotations service. Further diversification took place that year when the Company purchased the Autol-logic APS-4 computer type-setting equipment.

- In 1975, CRC had signed an agreement with GSI International for them to act as distributors of its services, through internatonal multiplexing networks, in France and Germany. In June 1977, GSI International purchased the whole if the issued share capital of CRC from its previous owners, ICFC. GSI is presently operating CRC as a separate company within the GSI Group which now operates in the UK, France, Belgium, Switzerland, Germany and Italy, making it the largest manufacturer-independent European computer service bureau with a combined turnover in excess of £40 million.

- Expansion has continued. In 1978, the CRC Group has a turnover of £4 million.

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GEOGRAPHIC DISTRIBUTION

- Virtually all of the services offered by the four Divisions in GSI Limited are on-line real-time services. To distribute these services, GSI UK has developed a national communications network which allows users to make local telephone contact to a multi-plexing unit which acts as a node within the network and brings together all of the users onto the central computer complex at Slough. Multiplexers are situated in Birmingham, Bristol, Bury St. Edmunds, Edinburgh, Fareham, Farnborough, Frankfurt, Glasgow, Leicester, London, Paris, Sheffield and Warrington. At any one time there can be one hundred users accessing each of the two Sigma computers, one hundred and fifty users on the Univac 1100 and ninety-six on each of the Univac 418's.

- GSI Limited now employs two hundred and twenty staff from programmers, operators and technicians through to customer support and sales consultancy staff. Sales and support staff are located throughout the country whilst technical and administrative personnel are based either at the London Head Office or the Slough Computer Centre. The Company has offices in Birmingham, Bristol, Bury St. Edmunds, Edinburgh, Fareham, Farnborough, Glasgow, London, Slough and Warrington.

KEY PRODUCTS AND SERVICES

There are four major divisions within the GSI Limited operation:

- Cybernetics Research Consultants

The founder company provides a complete data processing and consultancy service to the advertising, marketing and market research community. Services include SPS (Survey Processing Systems), an inter-active tabulation and statistical package and MESH, an interactive media analysis package. A number of databases are provided including the National Readership Survey, the JICTAR TV Audience Survey, the Target Group Index and the Businessmen Readership Surveys.

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- SCAN

This company provides on-line computing services to the financial community for the majority of stockbroking activities and has a wide range of specialist services including financial information retrieval and processing, portfolio investment, securities accounting and investment research. SCAN also provides comprehensive computer typesetting facilities from a wide range of applications from data maintained either on the Group's computers or from the users' own computer file. Typical computer typesetting applications include price lists, parts catalogues, directories, registers, timetables and library catalogues.

- QUOTEL Insurance Services

This provides computerised motor insurance and life assurance rates quotations for insurance brokers. Subscribing brokers receive from QUOTEL immediate data by telex, teleprinter or 'phone on the very latest best rates for customers' motor or life terms. Stored on QUOTEL's motor database are the rates of over 40 motor insurance companies and Lloyds syndicates which between them represent over 80% of the private motor insurance transacted in the U.K.

- Cybernet Time Sharing

This provides general scientific and commercial interactive computer services. The very nature of general purpose time-sharing is to provide the power of a large, powerful and sophisticated computer system in small quanta to many users and deliver this into the users' own office. Time-sharing has been described by some writers as a 'computer utility' likening it to utilities such as gas, electricity and water. Computing on tap as it were. The user benefits from having access to resources that would otherwise be uneconomic for him to install on his own account. It is not then surprising that the time-sharing division has experienced one of the most explosive growths of any sector within the computer industry. Typical applications for the Cybernet service include financial planning, forecasting budgetary control, statistics, information retrieval, engineering design and project planning.

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- At the end of 1977, GSI Limited was selected to provide a multi-million £ facilities-management computing service to Info-line Limited. Info-line was formed with the intention of becoming Britain's foremost on-line information service concentrating on technical, scientific and commercial information. Its sponsors include the Chemical Society, the Institution of Electrical Engineers and Derwent Publications. Info-line will offer a wide range of data bases covering bibliographic information about chemistry and related subject, physics, electrical and electronic engineering and patents. The facilities management contract involves setting up the Info-line data bases on GSI's own hardware and providing a remote, on-line access facility to users of the Info-line service. The databases will be resident on GSI's Univac 1100 system using 300 megabyte disk drives and over 6,000 million bytes of information will be accessible through GSI's extensive telecommunications network which provides local dial-up facilities in 13 UK multiplexing centres as well as major cities in Europe.

SYSTEMS HARDWARE

- Twin Honeywell Sigma 9 computers are the basis of the Cybernet Service, whilst SCAN runs on twin Univac 418 machines. The group has recently acquired a Univac 1100/12 which handles the QUOTEL work and will handle the recently signed contract to provide computer facilities for the Info-line information retrieval service and will ultimately take over from the Univac 418's to provide the whole range of SCAN services. Cybernetics Research Consultants, more easily referred to as AMR, the Advertising and Market Research Division, has its services based on the Sigmas.

- The twin Sigmas and the Univac 1100 are located at the Group's modern computer complex in Slough, whilst the Univac 418's are sited at the Group's London headquarters.

- The two Sigma 9's each have 160K of core, four fixed disk drives and a further eight movable disk drives giving a total storage capacity of over 800 megabytes. The machines are equipped with eight magnetic tape units operating at both 60 and 120kb and with two card readers, a card punch and two line printers.

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- The Univac 1100 has 262k of core with fifteen disk drives each of 300 megabytes and a further five disk drives of 100 megabytes each. There are both seven and nine-track tape units operating at 96 and 192kb and two line printers.

FUTURE STRATEGY

- Immediate plans are for the rationalisation of hardware with all of the SCAN services being converted to the Univac 1100/12 at Slough and the development of the Info-line service on the same hardware. That will mean that all of GSI's services, Cybernet, AMR, SCAN and QUOTEL, will then be able to be used through a common interface of the network whether in the UK or in Europe.

- All of GSI's services are inherently exportable and that will be the major thrust over the next few years. One of the reasons for GSI's acquisition of CRC was to bring its experience of time-sharing services into Europe and that is now about to happen. GSI has agreed to become a user of Euronet and is working on interfacing its own network into this. Discussions are already in-hand with Info-line to take their service into International markets and the Euronet will be one such way of doing this.

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COMPANY PROFILE

COMPAGNIE IBM FRANCE
Tour "Septentrion"
20 Avenue Andre Prothin
92081 Paris La Defense

Tel: 776-43-43

President : J. Lemonnier
Director General : S. Lamay
Total Revenue: 226.7MF (Input Estimate
Total Staff: 600

THE COMPANY

- The IBM Service Bureau is a division of IBM France. Geographically, the service Bureau has 17 locations in France, four of which are in Paris and 13 in the Provinces. Annexe-A shows the principal locations.

ORGANISATION & STAFF

- The Organisation chart in Annexe-B shows two District Managers. The Service Bureau is managed by Mr. F. Corbasson and he has a total staff comprised of some 600 persons which include a technical complement of about 150. Sales turnover figures for IBM Service Bureau are not provided, but if their income per head is in the same region as the independent companies, the overall sales revenue would be of the order of 200 MF per annum now.

- The IBM staff is numerically small in relation to the number of large mainframe computers available, which indicates that the type of support provided on a technical level must be specialised and limited.

- At the Sablons service bureau for example, there are 4 large 370 mainframes and a number of technical specialists who appear to be organised by software speciality. There is a special group for languages, a specialist group for time sharing services and so on. These staff are only permitted to advise, not to actually 'fix' client problems and this practice is rigorously observed.

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HARDWARE

- A list of the current IBM mainframe hardware is given in Annexe-C. Some 14 mainframes,(mostly IBM 370/158 or 370/168 power) are installed and running under a variety of different software systems, according to the service requirement.

NETWORK & TERMINALS

- There are seven principal methods of connecting on-line to IBM's mainframe computers:

  - o Telex (to 200 BPS)
  - o Dial-Up (Standard Telephone to 1200 BPS)
  - o Dial-Up CADUCEE (2400 to 9600 PBS)
  - o Leased Line (1200 to 4800 BPS)
  - o START-STOP (most towns in the Provinces)
  - o BSC (Strasbourg, Nantes and Bordeaux)
  - o SDLC

- The selection of line speed and network type depends upon the service required and the terminals used, which typically include IBM 2741, 3707 and 72 CMC for START STOP asynchronous modes or IBM 3270 or similar for Binary Synchronous Communication (BSC) or for RJE work, IBM 3774 and 3775 in SDLC mode. Also in RJE mode, one can use the IBM 2780, 3780, 3777 or plug compatible alternatives in conjunction with leased lines or the CADUCEE network.

KEY PRODUCTS AND SERVICES

- Eight different principal software operating systems are available:

  CALL
  VSPC

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APL
TSO
TBS
VM/CMS
OSCA
Batch Processing

- The first, the mainly conversational time sharing system (CALL) is not available to IBM's mainframe customer installations, but its successor VSPC (Visual Storage Personal Computing). CALL is only available via the service bureau. CALL offers BASIC, FORTRAN IV and PL/1 and The "APPLICATION SYSTEM" available with CALL is also available with VSPC.

- APL is fast increasing in popularity everywhere, and France is no exception. IBM are featuring APL as a problem oriented language for solving problems quickly with concise coding which is especially good for scientific and business modelling applications. Some customers are also using APL as a business systems language. APL users can have a maximum of 120 KB of memory on an interactive basis.

- TSO is designed to permit the development, on an interactive basis, of programs to run under the MVS operating system. The main languages supported are COBOL, FORTRAN AND PL/1. There are also syntax checking products for FORTRAN and ASSEMBLER.

- For engineers, there is an interactive version of the structural analysis package STRUDL available under TSO.

- TBS (or Terminal Business System) is primarily intended as a tool for simple development of straightforward commercial applications. Languages for programming are BASIC, PL/1, COBOL and ASSEMBLER as there are two high level report generators, REPORT and GIS.

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- VM/CMS is designed to permit interactive program development for a DOS or OS virtual storage environment. The service is supported from the Reaumur centre in Paris.

- OSCA is intended to bridge the gap between the CALL user and batch processing. It is a French development which simplifies the tasks of graduating from CALL to a mainframe environment.

- Batch Processing services are mainly available from the centres at Sablons (Paris), Lille, Marseille and Lyon. The Paris centre operates under MVS, but the other three locations operate under OS/VS1. Languages supported are, COBOL, FORTRAN H Extended, PL/1, ASSEMBLER and BASIC.

- Special Products

Special products exist for a variety of Applications. Here are some of the principal package names:

Financial Modelling	AS
Accounting	TANGE
Budgeting	ECART
Payroll/Personnel	PAILION/PAILOR
Stocks	SLICS
Production Planning	CAPOSS
Production Control	PRINCE

- Service Availability

The Sablons centre and other centres are available Monday to Friday from about 7.30 a.m. to 7.15 p.m. for the submission of jobs. Work submitted by 7.15 p.m. is run overnight.

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MARKETING

- IBM market both geographically and by industry sector under the DP Division organisation. Within the Service Bureau itself, technical support is organised by software product, in the main.

- There is going to be a strong push on VSPC to link together IBM's installed machine base customers with the services of the bureau (previously inhibited by CALL).

- IBM's marketing of interactive services tends to be weak due to the technical support emphasis on software rather than Applications. IBM's interactive service customers tend to be capable of developing their own Application problems. However as financial modelling, budgeting and accounting applications evolve towards greater compatibility at the database level, tools such as VSPC should gain in popularity with IBM customers who have IBM mainframes installed.

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ANNEXE - IBM/A

IBM FRANCE

SERVICE BUREAU LOCATIONS

Paris	Provinces	Overseas
Sablons	Bordeaux	Abidjan
Reaumur	Grenoble	Alger
Boulogne	Lille	Antanarivo
Septentrion	Marseille	Casablanca
	Montpelier	Dakar
	Nancy	Libreville
	Nantes	Noumea
	Nice	Papeete
	Orleans	Pointe a Pitre
	Rouen	Rabat
	Strasbourg	Saint Denis
	Toulouse	Tunis
4	13	13

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ANNEXE - IBM/C

IBM DATA CENTRE SERVICES

- Computer Centres

Location	Equipment	Comments
Sablons (Paris)	1 x 370/168-3 (4mb) 3 x 370/158 (2mb) (4mb)	1 for Batch Processing 1 for Call 370 1 for TBS 1 for Back Up
Reaumur (Paris)	2 x 370/158 (5mb) 2 x 370/148	to be replaced shortly
Boulogne (Paris)	1 or 2 x 370/158	Educational Centre
Septentrion (Paris)	1 x 370 148 1 x 370 158	To be closed down shortly
Lille	1 x 370/145 (768K)	
Marseille	1 x 370/145	
Lyon	1 x 370/158 (1,536K)	

- Applications Programs

  Some 500/600
  Some French, Some English, Some Mixed.

- Private Network Link to Sablons

  Accessed via some 41 locations in Paris and the provinces.

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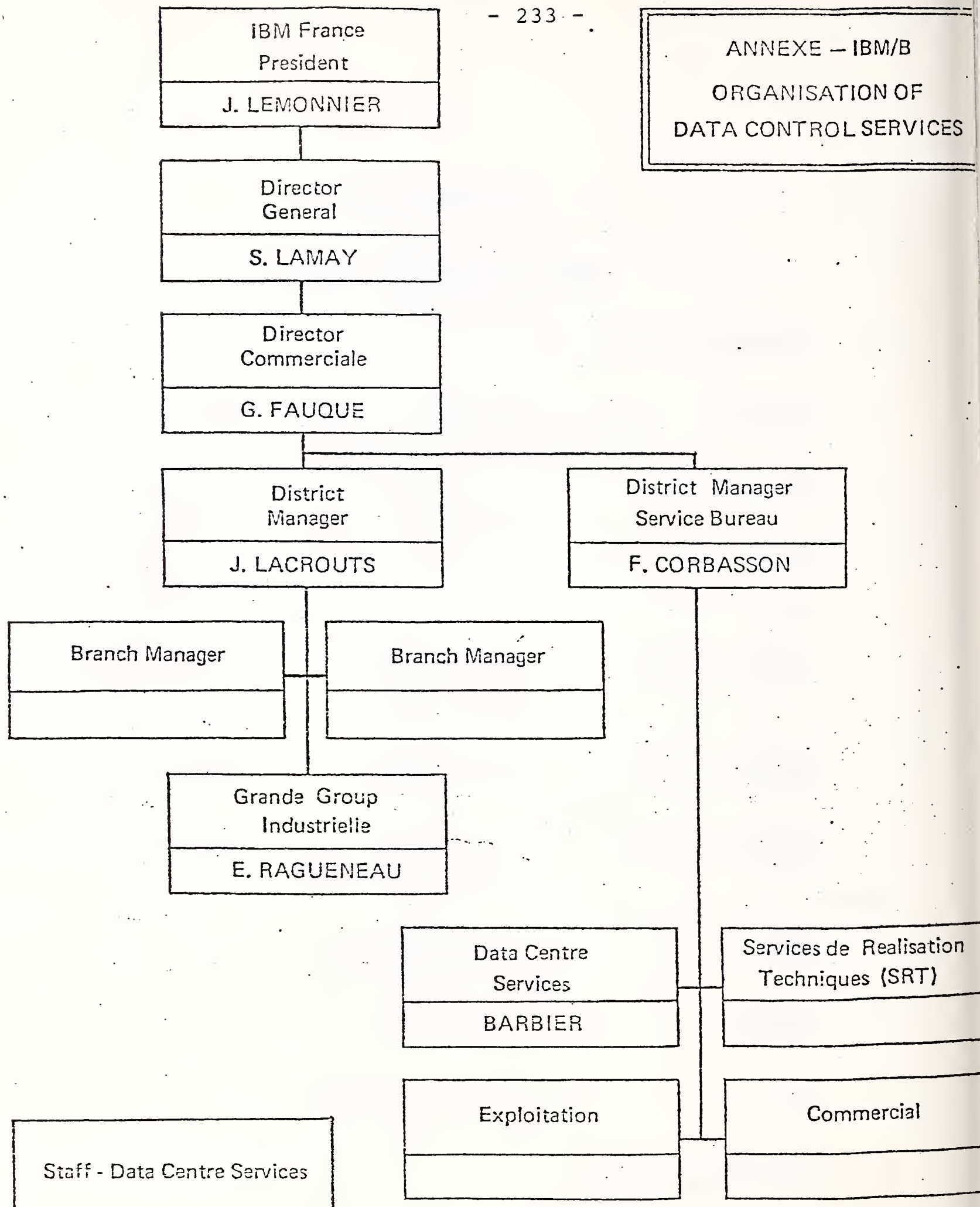
ANNEXE – IBM/B

ORGANISATION OF DATA CONTROL SERVICES



Staff - Data Centre Services

SRT	150
Other	450
TOTAL	600

Tel: 010-33-1-776-43-4

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COMPANY PROFILE

IBM BELGIUM NV SA
1 Square Victoria Regina
1030 Brussels

TEL : 02/219.38.80

Managing Director
C.A. De Meyer
Turnover 455.3M BF
Fiscal Year Ending
31 December 1977
Total Staff 2500

DATA CENTER SERVICES (DCS)
J.F. Kennedylaan, 2
1920 Diegem

TEL : 02/720.51.80

DCS Manager
A. Richel
Turnover 450-650 M BF
(Input est)
Fiscal Year Ending
31 December 1977
Total Staff 140

THE COMPANY

- IBM Belgium started its operations in 1936 and had a very quick growth. Its activities cover Belgium and Luxembourg, with offices in the major Belgian towns. The DCS started in 1950, offering batch processing, keypunching and programming.

- In October 1967, IBM had built in Diegem, near Brussels Airport, a center for its technical services and DCS. The original surface of 1000 MR has increased and now covers an area today of 30.600 M2 and saw the start of the Remote Computing Services (RCS) with RJE, and RAX.

- In 1971, the Call/360 and CRJE service were added. At that moment the computer equipment consisted of 360/65, 360/50 and a 360/40. A first 3703/158 arrived in 1972 to supply the Batch, RJE and CRJE services, while a 360/50 continued to offer CALL/360.

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- Several applications programs were developed locally: accounting, invoicing, payroll, inventory control. International programs like Promise (later Stratplan), Statpack and Minimis made of the Call service a real customer and user oriented computer tool. Strudl, MPSX, Survey and Pert were made available under RJE and CRJE. In connection with the sales of computer time and packages, IBM DCS provided a range of terminals to be connected to their mainframes. In 1974-1975 DCS changed the last 360 to a model 370. They installed TSO, TBS and APL as new RCS services.

- In 1976 a new user-oriented package Application System (AS) was introduced to supercede Stratplan, Minimis and Statpack on Call/370.

- In 1977 VSPC (Virtual Storage Personnel Computing) was announced by DCS and since September 1978 EPCS (European Personal Computing Service), the first international service of DCS, linking 6 European countries to the same mainframe.

- Also in 1978 two OECD data banks were announced to be available on DCS.

THE ORGANISATION

- The commercial department of IBM Belgium is split into three divisions:

  Data Processing (DP, big systems)
  General Systems (GS, small and medium size systems)
  and Office Products (OP)

- General Systems and Office products are grouped into General Business Group.

- In every group, the marketing is divided by industrial sector and by geographical sectors for the small and new business.

- IBM DCS and RCS are both part of IBM DP such that the actual sales performance cannot be separately identified.

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- The DCS employs about 140 people, of which some 25% are university graduates. The analyst, programmers and operators are split into teams, each specialized in a specific branch or industry. The Data Center makes use of the IBM Computing Center resources. The Computing Center's personnel and equipment is also used internally by other IBM divisions for development, benchmarks, installations, etc...

THE HARDWARE

- Diegem possesses one of the largest computer centers in Belgium, not only in the number of machines installed but in the computing power available. These facilities are used by the Data Center.

  IBM 370/158 Multiprocessor 8MB
  2 X IBM 370/158 of 3 MB
  3 X IBM 370/155 OF 1, 1.5 and 2 MB

- More than 550 terminals are connected to those mainframes. Other equipment available:

  IBM 3800 printer (13000 Lines per Minute)
  Plotter
  IBM Optical mark readers

KEY PRODUCTS AND SERVICES

AS

This system (Application System) was designed to allow users with no programming knowledge to apply Call to their problems. Like Call, AS is a command driven system and runs as an integral application on Call.

The AS system offers several language/command modules:

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- AS report
- AS Model (used to produce RPG II-like programs)
- AS Forecasting
- AS Graph (high resolution curve plotting)

IBM emphasises AS as an Oliver/table type language system which offers functional compatibility between the modules. Its effect is to tie users into a single problem solving language, specific to IBM, rather than offering separate single packages which place their own learning curve demands on the user.

Separate packages continue to be offered on Call, however, the main ones being:

- Statpack (Statistical Analysis)
- PNA (Critical path and resource allocation)
- Stratplan (financial planning and modelling)

Call offers also Basic, Fortran and PL/1.

VSPC

AS and Call/370 are now integrated in VSPC (Virtual Storage Personal Computing), the new IBM Time Sharing and Remote service.

APL that was offered as a separate product is also available under VSPC.

Several programming languages can be used:

- in interactive mode: VS BASIC, VS APL, FORTRAN, PL/1
- in background (offline): VS BASIC, FORTRAN, PL1, COBOL and ASSEMBLER
- a whole range of program products and application programs are added like: MPSX, PROJACS, EPLAN, MINI-PERT, etc.

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EPCS

This is the service announced in September 1978 and allows to companies or organisations with affiliates in different european countries: Belgium, France, Germany, Italy, the Netherlands and United Kingdom to be linked to the same computer, having access to the same information or files.

This service uses the program product VSPC and is interesting as well as for the professional user as for the management of companies. The users have access to this service from an IBM 370/158 computer, installed in Zoetermeer in the Netherlands. The international network consist of high speed lines using the SNA principles.

The programming languages available are APL, Basic, Fortran and PL/1. The program library is important and has also AS available. The securities integrated to EPCS consist of protection to system access, and to the confidentiality and integrity of the data and programs of the users: identification numbers, passwords, access to specific program libraries and daily backup of informations.

The service is available 5 days a week from 8 to 22H.

OECD

In June 1978 the Belgian Data Center installed two OECD data banks on their computers:

- the main economic indicators (2300 historical series)
- the statistics of foreign trade (1350 products IN 25 member states and 125 OECD connected countries)

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Terminals Available

For these different services IBM has a choice of terminal equipment of which the main systems are:

- Teletype compatibles
- CMCT 72
- IBM 2740/1 1050
- IBM 3767 (Keyboard printer, SDLC)
- IBM 3770 family (diskette, programmable, SDLC)
- IBM 3270 family
- IBM 3790
- any IBM computer in RB mode

TBS

An important service of DCS is Terminal Business System (TBS) geared towards the Batch/RB user who is beginning to expand into transaction oriented applications.

There are four grades of TBS service:

- Fast (processed within 15 minutes of queue entry)
- Normal (processed within 2 hours of queue entry)
- Overnight
- Deferred (processed with 7 days of request or to an agreed schedule)

Utilities include File Definition, File Loading, File Enquiry, Report Writer, File Maintenance and Utility Printing. Parameter commands such as Record and File parameters and Application Job parameters describe the content and sequence of data and processing.

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For conversational processing a language is provided for analysts and programmers to describe the entire process they wish to accomplish. The program is then translated by a system utility and stored for retrieval/execution.

SALARY ADMINISTRATION

- One of the major Batch programs of DCS is the payroll package. The program is regularly updated for the new laws of social security and taxes. Several statistical information can be obtained upon request of the customer.

ACCOUNTING

- The major success of DCS is the General accounting package, with its different modules for the different ledgers, cost accounting, budgeting, etc. The major reference are the several automotive dealers who are using the system since years. The customer can provide the basis information under the normal computerized forms or user small machines that allow optical reading.

STRATEGY

- The DCS covers the entire market and offers clients a broad range of services. As such, it completes the role of the IBM DP Division. Even when the users possess their own computer, the DCS offers them the possibility of utilizing the facility to effect work more efficiently themselves.

- In fact when connected to the Center by terminal and telephone network, these users virtually become small satellite units and have at their disposal computing power greatly exceeding that offered by their own installation.

- Besides this, the Data Center carries out specific work as required by clients.

- The whole range of highly trained specialists is at the disposal of IBM's customers to enable them to obtain optimal solutions of their problems. In some cases, the DCS also undertakes for clients the complete setting up of their applications and the subsequent servicing thereof.

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- IBM Data Center is in Belgium the major time-sharing company. IBM's current hiring spree suggests, however, that there is to be a renewed attack by IBM on the RCS market which should be taken seriously by the other top RCS vendors (GTS, CDC, CIG) due to:

  (a) the integrated education, service and support available nation-wide to users of IBM's DCS/RCS services through DP Division

  (b) the sheer number of salesmen that IBM is acquiring and

  (c) IBM's image in all that it does

- The most recent service, EPCS, shows that IBM want also to cover that part of the market of internationally linked users, a service that could only be provided till now by the internationally time-sharing companies.

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COMPANY PROFILE

THE IBM DCS AND RCS GROUPS

(part of the Data Processing Division
of IBM United Kingdom Ltd.,
Itself a subsidiary of IBM UK Holdings Ltd)
P.O. Box 41, North Harbour
Portsmouth, Hampshire PO6 3AU

Tel: 07018 21212

- IBM's Data Centre Services (DCS) and Remote Computing Services (RCS) are both part of the IBM Data Processing Division such that the actual sales performance cannot be separately indentified.

- In the mid 70's the Remote Batch and Interactive Timesharing business of IBM suffered from the loss of SBC, both in terms of public image and IBM management attention to the development of the European operations remaining from the takeover.

- That phase is at an end with an aggressive growth plan in the early stages of implementation. In comparison with IBM's other European markets, the U.K. RB and T/S revenues (of $15m*) are in below of West Germany ($12m*) but easily exceeded by those of France ($22.3m*).

- Total Computer Services revenue (including Batch Services and Software Products revenue) modify this picture substantially. West Germany is the largest market with total revenues of $27.5m*, followed by France ($23m*) with the U.K. a distant third ($19m*).

- IBM's new plan for a strong development of RB and T/S services has recently been dramatised in the specialised press by the preparations of the Warwick supercentre. This 174,000 sq. ft. office building and computer centre could eventually house as many as six 370/168's tied to a network of 80 high speed lines, interconnecting the 10 concentrators serving the UK market.

*** INPUT estimate**

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- To date only one 370/168 has gone live with the concentrators switching customers input to either Warwick of the existing 370/155's in London, used for the Terminal Business System and Call Services. Warwick will also serve as a marketing, sales and services centre HQ for the Midlands.

- IBM continues to run Batch Bureaux in the South and the Midlands. At last count, these were:

CROYDON	2 x 370/158
	1 x 370/168
MANCHESTER	2 x 370/145
BIRMINGHAM	1 x 370/158
	1 x 370/135

- IBM's current hiring spree suggests however that there is to be a renewed attack by IBM on the RCS market which should be taken seriously by the top RCS vendors in the UK (Honeywell, Comshare and ADP-NIS) due to (a) the integrated education, service and support available nationwide to users of IBM's DCS/RCS services through DP Division (b) the sheer number of salesmen that IBM is acquiring and (c) IBM's image in all that it does.

- Possibly the greatest weakness in IBM's service is the lack of performance of the 370 line in the T/S environment when compared to, say, the DEC 10. IBM must of course, use only its own hardware, which in this particular operational environment puts them at a performance disadvantage.

KEY PRODUCTS AND SERVICES

- In April 1975, IBM announced A S (Application System). This was designed to allow users with no programming knowledge to apply CALL to his problems. Like CALL, A S is a command driven system, and runs as an integral application of CALL.

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- The A S system offers several language/command modules:

  - A S REPORT (used to enter report format specifications)
  - A S MODEL (used to produce RPG II - like programs)
  - A S FORECASTING (obvious use)
  - A S GRAPH (high resolution curve plotting)

- IBM emphasises A S an Oliver/tabol type language system which offers functional compatibility between the modules. Its effect is to tie users into a single problem solving language, specific to IBM, rather than offering separate single packages which place their own learning curve demands on the user.

- Separate packages continue to be offered on CALL, however, the main ones being:

  - STATPACK (Statistical Analysis)
  - PNA (Network Analysis)
  - STRATPLAN (Financial Planning)

- STRATPLAN offers a variety of standard growth curves (linear, exponential, polynomial) which is dangerously simple. An unskilled user will not command an inderstanding of the theory behind these tools and so cannot appreciate the implications. (A professional will most likely want to build his own).

- CALL, IBM's T/S system, offers BASIC, FORTRAN and PL/1 as the main programming languages. Terminal Command Language covers the remote system communication, program entry/storage/execution and modification.

- There are four levels of library programs:

  - User library (Proprietary)
  - One star (Available within a company)
  - Two star (All CALL users)
  - Three star (IBM programs, available internationally, e.g. A S, PNA etc).

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TERMINAL TYPES

o The following terminals can be used on CALL:

- Teletype compatibles
- Communicating Magnetic Card Typewriter
- IBM 2740/1 (slow Keyboard Printer)
- IBM 3767 (Keyboard printer, SDLC)
- IBM 3770 family (diskette, programmable, SDLC)
- IBM 2780 (RB)
- IBM System (RB in 2780 mode).

DATA CENTRE SERVICES

- The main service of DCS is Terminal Business System geared towards the Batch/RB user who is beginning to expand into terminal-oriented applications.

- The basic strategy of TBS is to temporarily set up the user's terminal oriented applications on the IBM Data Centre and then transfer them in-house.

- DCS, therefore, is very much a staging post for IBM systems that are either being expanded on installed first time.

- There are four grades of RB services:

  - Fast (Processed within 15 minutes of queue entry)
  - Normal (Processed within 2 hours of queue entry)
  - Overnight (Self explanatory)
  - Deferred (Processed with 7 days of request or to an agreed schedule).

- Utilities include File Definition, File Loading, File Enquiry, Report Writer, File Maintenance and Utility Printing. Parameter commands such as Record and File parameters and Application Job parameters describe the content and sequence of data and processing.

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* Midlands Commercial - (All the above in the Midlands)
* NW Commercial - (All the above in NW)
* Leeds Commercial - (All types of business)
* Scottish Commercial - (All except finance business in Scotland)

- **Manufacturing District**

* London South Manufacturing
* London North Manufacturing
* North West Manufacturing
* Midland Manufacturing - Mainly automotive business
* Midlands Industrial - Other Manufacturing customers in Midlands
* North East Manufacturing - All business in NE

- **GSD District**

* Croydon Branch
* Richmond Branch
* Welwyn Branch
* Birmingham Branch
* Bristol
* Glasgow
* Manchester
* Nottingham

- In 1977 this structure was completely overhauled, the 22 branches being reduced to 15 by essentially integrating the industry sector responsibilities into geographically oriented branches. The one exception is Banking which is reduced from two branches (London and Central) to one (London).

- Now each branch has industry specialist units for each of Government, Insurance, Finance (houses and institutions), Distribution, Printing/Publishing and Manufacturing, where this makes sense geographically.

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- The result is an "all things to all people" approach matrixing mainframe hardware and peripherals, terminals, services (whether as an add-on to hardware or as a replacemen for an in-house system) and industry expertise.

- For conversational processing Conversational Job Language (CJF) offers a language to analysts and programmers to describe the entire process they wish to accomplish. The program is then translated by a system utility and stored for tetrieval/execution.

IBM UK Ltd Organisation

- DP Division integrates DCS and RCS. To follow the trend in IBM's market thinking, a comparison of the 1974 and 1977 organisation charts is therefore instructive. In 1974 there were five so-called "Districts" with five to six branches each:

- Government District

* Government Branch (Central Dpts, MOD, Universities and Research)
* Transport & National Enterprise (Surface/Air transport, GEGB & P.O.)
* Government South (Local Gov./Educ., Publis utilities and Medical in the Southeast)
* Midlands Government (Same in Midlands)
* North West Government and Finance (Same in North and West plus Finance in NW & Midlands)

- Finance District

*	Central Banking	-	(The main clearing banks)
*	London Banking	-	
*	Insurance Branch	-	(Insurance in the South)
*	Finance Branch	-	(Other finance houses in the South)
*	Edinburgh	-	(All financial institutions in Scotland)

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- Commercial District

*	London Distribution	(Retail, Wholesale, Consumer packaged goods, textiles).
*	London City Commercial	(Conglomerates, printing, publishing and services

- IBM's new DP Division sales organisation is as follows:

DP DIVISION

Director, DP Division P.C. Clarke
Sales Manager DP Division A.B. Cleaver

LONDON AND SOUTH EASTERN REGION

Manager, J.S. McCraken

	Manager
South Eastern Branch	J.G. Tilt
South London DP Branch	N. Tonkin
North london DP Branch	A. Brace
London City Branch	H. Mackay
London Banking Branch	J.W. Nicoll

CENTRAL REGION

Manager, D.J. Livermore

Eastern DP Branch	H.W. Grotefeld
Central Southern DP Branch	P.A. Morrison
South Western DP Branch	R.H. Marriott

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COMPANY PROFILE

IBM NEDERLAND NV
Johan Huizinglaan 265
Amsterdam

Total 1978 Sales: $21.9M

TEL: 020 5133111

THE COMPANY

- IBM Nederland has it's head office in Amsterdam with it's main equipment centre at Zoetemeer and smaller centres at Arnhem, Eindehoven and Hengelo. Making their coverage of Holland almost complete except for the northern provinces.

KEY PRODUCTS AND SERVICES

- - Standard Programming
  - Time Sharing
  - Software Packages
  - Custom services (Local)
  - Remote Batch
  - Payroll
  - Central Accounting
  - Inventory Control

IBM are specialist in the fields of construction and manufacturing and market a wide variety of packages, also applicable in other areas.

- CALL
- APS
- USPC
- TBS

For Timesharing and Remote Batch

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- FORECASTING (Inclusing program and report generators and forecasting)
- STATPACE (Statistical Analysis)
- PNA (Network Analysis)
- STRATPLAN (Financial Planning)

European Personal Computing Service

IBM has announced a major extension of the company's national Remote Computing Services. This is a new international computing service network linking Belgium, France, Germany, Italy, The Netherlands and the United Kingdom. Spain and Switzerland should be linked by the end of 1979. The service offers potential benefits for international business management. Known as the European Personal Computing Service, the network enables managers and professionals of organisation with subsidiaries in the six European countries to consolidate and evaluate essential business and financial information

One of IBM's leading time-sharing products - the Vitrual Storage Personal Computing program - lies at the heart of the service, which operates from the IBM computer centre at Zoetermeer in The Netherlands. Users in the six European countries have access to an IBM System/370 Model 158 computer in the centre. Conection from the United Kingdom will be made by way of high-speed communication lines that make use of a concentrator and Systems Network Architecture protocol. The following IBM terminals can operate with this service: the IBM 2741 and 3767 Communication Terminals, and terminals of the IBM 3270 Information Display System and IBM 3770 Data Communication System.

Many users of IBM's personal computing services currently take advantage of AS, which is an information processing system. The Application System provides extensive facilities for the collection, management, and retrieval of information and offers a wide range of data presentation display. The system also incorporates more sophisticated techniques for complex analysis, business planning, and various management science applications.

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Software support offered features four programming languages: APL, BASIC, FORTRAN, and PL/I as well as an extensive applications library.

Security procedures built into the European Personal Computing Service are designed to afford security of access to the network and to protect the integrity of specific data. Several levels of program protection are offered, including passwords and numbers for user identifications, password protection of individual files, library structures, and the daily backing up of data.

IBM CALL

CALL is IBM's timesharing service and provides a powerful yet easy to use tool to assist in the day-to-day running of today's businesses. The service is provided by two IBM computer centres in London, and can be accessed by a variety of different terminals which can be situated in a User's office. the terminals would be connected to the CALL service either by the Public Switched Telephone Network or by a direct leased line. In the main business centres of the country there are telephone line concentrators installed, so that, by dialling a local number instead of a London number, for connecting to CALL, Users are able to keep their telephone costs to a minimum.

The main requirement of CALL has traditionally been in the area of business planning, and, to meet this need, IBM has developed a system for business managers called Application System (AS).

AS has been designed specifically for non-computer personnel, and as such is both easy to learn and easy to use. Although AS uses simple English-like commands, like PLOT, PRINT or SELECT, it provides a total data processing facility. AS is an information - handling and processing system which removes the conventional programming barrier between the problem and the solution, so that Users no longer have to bid for resources from their own computer department in order to computerize a new application. Likewise, they would not have to teach their own computer staff the operation of their own department before they are able to tackle their project.

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Alternatively, Usrs may interactively develop and run programs written in VSBASIC, PL/I or FORTRAN, as well as using a wide range of engineering and management programs which have been supplied by IBM.

With Call, Users only pay for what they use; there is no joining fee or standing charge, nor is there a premium fr using any of the pre-written engineering or management programs which are freely available to all users of CALL. The costs are broken down under three main headings. These are the time Users are connected to CALL, the number of processing units used, and the amount file storage they use. Additionally, should Users wich to use On Line Centre Services, then they will have the facility for reading and writing punch cards and magnetic tape files, and printing long reports at our London computer centres.

CALL is like a security safe with only one key, and only the User would have that key. Every CALL User has their own unique user number and password; the user number being their accounting code, and the passwork being a code which they are able to change whenever they want. Thus, nobody can access their CALL libraryof programs and files without knowing the key combination. With CALL AS, Users are able to apply passwords to individual files and programs to futher restrict access.

Recently, the traditional business planning of CALL has been extended to include an increasding numbe of commercial applications such as personnel, sales ledger, or stock control. This has been due to a combination of the flexibility of CALL and the speed with which applications can be implemented.

COMPUTER HARDWARE

- ZOETERMEER (Main Centre)

1	x	370/158
1	x	370/125
2	x	370/145
1	x	370/155
1	x	155 MP

Arnhem, Eindhoven and Hengelo are RJE stations all using 360/20's.

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COMPANY PROFILE

MATHEMATISCHER BERATUNGS-
und PROGRAMMIERUNGSDIENST GmbH
Semerteichstrasse 47
4600 Dortmund 1

Telephone: (0231) 436081
Telex: 8227198

Friedrich Wilhelm Humme
Chairman of the Board
Total employees: 241
Total 1978 sales: DM 24M

THE COMPANY

- Formed in Dortmund in 1957 by 14 separate organisations with the backing of the local chamber of commerce, MBP was taken over in 1970 by Hoesch Werke AG, Dortmund, an associate company.

- The capital was increased to DM 2M at that time to provide the necessary resources to a rapidly expanding organisation.

- MBP's revenue growth has been in two phases:

  - pre 1970 at 10-15% per annum
  - post 1970 at 22-60% per annum

  Employment meanwhile has risen steadily at an almost constant annual rate of 12%. The staff is quite experienced, (7 years professional experience on average) and mature (average age 35 years).

- At year-end 1976, turnover had risen to DM 19.1M and employment stood at 241. Captive revenue from the parent company is still relatively small at 17% but is increasing.

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KEY PRODUCTS AND SERVICES

- MBP has attempted to rationalize two conflicting goals; those of achieving a broad technical competence while offering specialised abilities in key areas. Thus MBP offers experience in micro and mini computers, peripherals, utility systems and mainframe systems of most manufacturers.

- According to the complexity of a given project, staff from the specialist divisions spread over Germany are combined with the more general purpose knowledge of system-oriented groups.

- The main activities are:

  - Basic software development
  - Data management systems
  - Data protection and security
  - Data communications and networks
  - Interactive information systems
  - Administrative systems
  - Engineering systems
  - Optimisation (hardware and software)
  - Process control
  - Civil Engineering
  - Training
  - Computer centre operations

- In each of these areas the experience and development potential is impressive but already there is a long history of achievement:

  - In the basic software area, MBP had developed compilers for all of the high level languages, a real-time language (PEARL), microcompressor assemblers and translators.

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- Data Management systems experience is mainly in the use and implementation of other supplied products rather than in the development of their own.

- Data protection and security is now the responsibility of a separate company (MBP - Datenschutz Gmbh), set up in 1977.

- Data communications and network experience has been with new installations in Industry, public administrations and commerce and includes the planning phase, the adaptation of standard DC products to specific needs as well as the integration of micro and mini computers.

- MBP has participated in some well known, large software projects (SPACELAB, EUROCONTROL) involving satellites and space probes.

APPLICATION

- The standard software products offered are:

  - accounting system (MBP-FIBU)
  - statistical analysis (PRODASTE)
  - order processing and manufacturing system for the upholstered furniture branch (FAPOS)
  - list and formula parameter-based system (PARLIS)
  - cost calculation system (PROKOS)
  - payroll (PROLOG)
  - integrated marketing analysis and monitoring system (IMAUS)
  - sample-based statistical information system (PROSIS)
  - general analysis and forecasting system (UPAS)
  - ADV/ORGA's data and record description (DAK)
  - exception reporting table system (VORELLE)

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COMPUTER HARDWARE

- MPB shares access to a number of computers that are suited either on associates' premises or with service companies.

o	Siemens 4004/25	(Join usage with BMI)
o	Siemens 4004/155	(associate)
o	IBM 370/158	(joint usage)
o	IBM 370/168	(joint usage)
o	UNIVAC 1108	(through a DATA 100 terminal of Benson Plotter).

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COMPANY PROFILE

SCICON COMPUTER SERVICES LTD
Brick Close
Kiln Farm
Milton Keynes
MK11 3EJ

Tel: 0908 565656
Telex: 826693

Brian Elson
Managing Director
Total Turnover (1978): £3.8M
Total Staff: 190

THE COMPANY

- SCICON COMPUTER SERVICES LIMITED is one of the earliest established Computer Service Bureau companies operating in the United Kingdom. Its operation began in 1960 when CEIR Ltd began as a systems house specialising in the application of advanced computer based techniques to management problem-solving.

- British Petroleum, a major client, took a majority shareholding in 1964 and in 1966 CEIR became a 100% owned subsidiary of BP.

- In 1969, due to the purchase of the former U.S. parent CEIR Inc. by a computer hardware manufacturer the name was changed to Scientific Control Systems Ltd, SCICON in short, in order to maintain independence. The importance of this function was recognised in 1975 when SCICON Computer Services Ltd was established as an independent trading entity, though remaining a 100% subsidiary of B.P.

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SYSTEMS HARDWARE

- The purpose-built computer centre, designed to SCICON specifications, is located in Milton Keynes. Non-stop computing services are available and the centre has a provision for the future expansion of the plant, computer hardware and office accommodation.

- The hardware configuration consists of two independently operated Univac 1108 maximum size mainframes.

- The communications network is controlled by the Scicon developed FE11 Front End System: this consists of 3 DEC PDP 11 mini computers, any two f which are on-line at a given time.

- The shared mass storage between the two 1108's provides a continuous availability of computing services regardless of the failure of any component within the total system.

OPERATING SOFTWARE

- The Univac 1108's are operated on OS1100/EXEC 8.

- This multi-program operating system offers facilities for local and remote batch, interactive and time sharing operations in a transparent manner.

KEY PRODUCTS AND SERVICES

- SCICON's services encompass three main product categories.

  - Management Sciences
  - Applied Engineering
  - Business Systems

- Management Sciences

  Scicon developed a fourth generation mathematical programming code - SCICONIC - and which is under continuous development.

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Application areas are:

- statistical analysis
- forecasting
- financial planning
- market research analysis
- simulation
- econometircs
- product mix
- transportation
- blending.

- Applied Engineering

This service is based on a selected range of industry accepted software products for:

- structural design
- chemical engineering
- computer aided graphics

- Business Systems

These are designed to be cleint - specific and cover a wide spectrum of finance and industry such as:

- Merchant Banks
- Stockbrokers
- Local Authorities
- Manufacturing concerns
- Gulf Oil
- British Steel

- DATA SECURITY and access security is implemented through a multi-level key-card security system which operates on a "need for entry" basis.

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COMPANY PROFILE

SIA Limited
Ebury Gate
23 Lower Belgrave Street
London SW1W 0NW

Gerry Pick
Managing Director
Total Turnover (1978): £4.5M
Total Staff: 196

Tel: (01) 730-4544

THE COMPANY

- SIA Ltd was established in 1967, backed and funded by the consultancy group Metra International and in 1968 they installed a CDC 6600, a year later recording a turnover of £750,000.

- In 1974 CISI took over the bureau and in 1975 the Cyber 72 was installed. The remote batch service has been available since 1969, timesharing since 1975.

ORGANISATION

- SIA offices in the UK are located as follows:

SIA Ltd
Ebury Gate, 23 Lower Belgrave St
London SW1W 0NW Tel: 01 730-4544

SIA Ltd
Warwickgate House, Warwick Road
Old Trafford, Manchester M16 0QQ
Tel: 061/8724/077

CSS Ltd/SIA Ltd
5 Windmill Street, London W1P 1HF
Tel: 01 636-3166/3118

SIA Ltd
Cheapside Chambers, 43 Cheapside,
Bradford BD1 4HP Tel: 0274/25770

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SIA Ltd

24 St. Andrew Square, Edinburgh
EH2 1AS Tel: 031-557-0200/2

- All these offices are linked via one or more 9600 baud lines and offer some or all of sales, support personnel, over-the-counter batch services, remote batch and/or a local multiplexor access for dial-up terminals.

- In addition SIA has 9600 baud links with offices in Rotterdam and Paris.

- Ganymede is a systems house, established in 1976 and currently organised as a subsidiary of SIA. It does hardware and software work on minis and micros (typically Motorola M6800 Assembler work) and mainframe technical software. SIA calls on its help for the larger software projects.

TURNOVER, PROFIT AND STAFF GROWTH

- SIA has 196 staff in the UK of which 23 are in sales and marketing and 80 are professional sales and technical support staff; 25 work in Ganymede.

- In 1977 SIA's turnover topped £4 million and over the last year their growth rate has been around 40% per annum. Pre-tax profits were around 20%.

- Revenue for first half of 1978 is 45% up to the same period in 1977.

SYSTEMS HARDWARE

- All of SIA's hardware is in London and consists of the following:

  - CDC 6600 and Cyber 72 dualled as a single configurations. The 6600 has 128k memory and the Cyber 72 has 96k. This dualled configuration provides the following common features to both mainframes:

- o 1,540 million characters permanent disk storage (Soon to be doubled)
- o 330 million characters auxiliary disk storage (Soon to be doubled)
- o two mag tape drives (7-track)
- o eight mag tape drives (9 track)
- o two card readers, one punch
- o three line printers
- o paper tape readers and punch offline equipment
- o PDP-8L mini with 8k main memory
- o Tektronix CRT displays
- o D-MAC digitiser

- There are 25 in-house terminals of various types for client and staff use.

- Regnecentralen remote work station with high-speed line to CISI's 5MB IBM 370/168 in France.

- Also have access to CISI's Cyber 173 CDC 6400, 6600 and 7600, IBM 370/168 under MVS and TSO (due to be dualled soon) IBM 360/75 (with APL) and various smaller machines (IBM 370/158s and Honeywell 6000, C11 IRIS 55 and 45).

TERMINALS

- 45+ ports are currently used for remote batch terminals and there are more than 12 available for dial-up RBT's. Both services are offered at 2400-4800 baud. (To be increased in late 78).

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- Currently some 64 simultaneous interactive terminals can be supported at the usual 10-300 cps operation. (To be increased in late 78). Around 100 customer RBT's are currently using SIA's service.

- Most remote batch terminals can be connected with the restriction of being capable of observing CDC, 200-UT protocols, including Control Data's own remote batch terminals plus Ventek Datapoint, CTL Satellite One, Data 100, RC 3600 and a collection of minis including Prime 300/400/500, PDP-11, MODCOMP II and DG Nova.

- SIA uses three MODCOMP II machines as front-end communications processors for rapid increase of the number of ports it can offer when demand calls for it.

- Interactive terminals must observe ASCII protocols which allows for a large variety. Most printer terminal VDU's and graphics terminals capable of 10, 30, 60 and 120 cps asynchronous operation are supported and around 300 client terminals of these types use SIA.

- SIA have signed a contract with Control Data Ltd for a Cyber 75 Model 100 with 131k 60 bit word core store, 14 peripheral processors, 24 high-speed data channels and other associated CDC equipment. This will be delivered in December 1978.

- The Cyber 175 will be run as a linked dual mainframe system, closely coupled to and sharing files with the existing CDC 6600. The machines will run under SIA's KRONOS 75 operating system, providing timesharing, remote batch and batch services as at present but with an improved interactive response, batch turnround the capacity. The Cyber 175 will increase SIA's processing power by 2.4 times.

KEY PRODUCTS AND SERVICES

- Applications

SIA covers four main applications areas - management, engineering, numerical control and transportation:

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Management - this provides around a quarter of SIA's revenue.

Packages include:

- SPSS - statistics
- ICMS - corporate planning
- System 2000 - database management
- Apex 3 and UIMP - mathematical programming and optimisation
- HOCUS 3, MIMIC, SIMSCRIPT - simulation
- SYBIL RUNNER - time series analysis and forecasting
- POLIGAMI, NETFLOW - physical distribution planning: POLIGAMI was developed in-house
- PROPLAN - project planning and control

Engineering - provides 29% of total revenue. Packages include:

- LEAP 4 - frame structure analysis
- NASTRAN AND FEMALE - finite element modelling and analysis: FEMALE was developed in-house by SIA.
- PISCES - large-response analysis.
- MELTAN - thermal analysis
- MARCS - marine computer system, covering analysis and design of offshore structures
- Computer-aided highway design
- Chemical engineering and process simulation (including SSI/100 developed by Simulation Sciences Inc).
- Equipment design and plant noise
- Structural analysis and design of process pipework (including PIPE-STRESS developed by SIA).
- Computer Graphics (including DISSPLA and GINO-F)
- Surface approximation and contour mapping (CONTRIV)

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Transportation - the 12 packages include TFA, SIA's own integrated suite of 50 programs covering all aspects of road transportation, land use and highway appraisal studies. This section contributes about 19% of SIA's revenues.

Numerical Control - 10 packages in the section include APT. This section also covers other industrial programs such as one for the routing of printed circuit boards.

OTHER SERVICES

- SIA offers card punching, verification and interpretation and has 10 staff for this. They subcontract out large quantities and peak-time loads (with the client's permission). A courier service can be arranged.

- Most of SIA's other services are centred on the needs of bureau clients. SIA will carry out complete projects especially in business, engineering and transportation studies. 15-20% of their revenue comes from this kind of consultancy work (including the machine time which is sold as a by-product of these operations).

- IBM services are available for those who wish to use the link to the 370/168.

- A wide range of training courses and seminars are run on the basis of encouraging people to use SIA's services as a bureau: but the fee (£10-£40 per day) is intended to cover the main costs of running the course rather than show a profit. If you don't necessarily want to use SIA as a bureau the courses could still be useful. For instance, they offer one on SPSS which could be useful if you have SPS and have not worked out how to use it.

PRODUCT AND MARKETING STRATEGY

- IBM Service - the link with the IBM CISI Service is expected to expand during 1978-79.

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- The next planned major expansion to the CDC equipment is planned for 1979, when SIA feels greater computing capacity will be required.

- SIA is investing a great deal of money on front end processing and network management systems.

- SIA plans to sell its software and services overseas.

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COMPANY PROFILE

SLIGOS S.A. BENELUX
Avenue Lloyd George 7
1050 Brussels

TEL : 02-649-9653

Managing Director
G. Bauvin
Total Staff: 230
Turnover: 313M BF.

THE COMPANY

- Sligos S.A. Benelux, was formed in 1973 from the EDP department of Papeteries de Belgique. It is owned by: Sligos France 60% and Papeteries de Belgique 40%, who themselves are a member of the group Societe Generale. There is also a subsidiary company of Sligos S.A., Industrial Computing, which was formed shortly after the setting up of the major company. In 1975 Sligos acquired SMCS Informatique which had been established in 1947, and again in 1976 they acquired Creative Micromedia which had been established in 1975.

KEY PRODUCTS AND SERVICES

- The main products offered by Sligos are:

  - Batch
  - Remote Batch
  - Interactive Timesharing on an IBM 370/145
  - Turnkey Systems
  - Programming
  - Punching

- They have successfully completed for some 16 Belgian Banks a cash-dispenser application facilities management.

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GEOGRAPHIC COVERAGE

- Brussels
- Tournai
- Acilst
- Charleroi

- Activities are mainly in the French speaking part of Belgium and they also extend their activities into the Northern part of France.

REVENUE

- 20% of the company revenue is captive from one of the shareholders 'Papeteries de Belgique', and the main customer areas have been Banks, Insurance, Levi Strauss and Atlas Copco.

HARDWARE

- ITEL A/5
- IBM 145

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COMPANY PROFILE

SLIGOS
91 rue Jean Jaures
92807 Puteaux

Tel: 776-42-42

Gerard Bauvin
President
Total Turnover 1978: $59.7M
Total Turnover 1977: $45.2M
Total Staff: 1300

THE COMPANY

- SLIGOS is one of the larger bureaux in France, having a turnover in 1978 of $59.7M. The principal shareholders are Credit Lyonnais (80%) and Tymshare (20%). SLIGOS was created in 1972 from SLIGAS and CEGOS (a subsidiary of Credit Lyonnais). The company moved into its present building in 1974. About 75% of SLIGOS revenue comes from computer operations and contract computer operations services and 25% of the revenue is derived from consultancy, analysis and programming.

- SLIGOS deals with two distinct EDP sectors: Computing services and Professional services. SLIGOS feels that this is a successful combination, obtaining a blend of one activity with the other: Computing Service companies completing their range by offering "turnkey" systems; Consultancy companies sharing their knowledge with associated bureaux-services.

- SLIGOS thinks that bureaux-services must possess standard products, either functional (e.g. accounting, payroll, personnel, invoices etc) or sectorial (on-line systems for automobile dealers, construction industries etc...)

- Future growth for SLIGOS will come from the combination formula: clients will own a small data acquisition and control system which can do some local processing and use the network for their main services with the help of standard products.

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- This combination formula is often what appears the most suitable for the client's as a result of feasibility studies.

- SLIGOS' 1977 revenue went up by 26.5% over 1976 and slightly better growth was expected in 1978.

ORGANISATION & STAFFING

- The organisation chart for SLIGOS is shown in Annexe-A. There were 1300 personnel in the group in 1978 of whom 800 were employed in France. Of these, 200 were employed at Blois and 600 in Paris.

- The staffing analysis is as follows:

Administration		20
Sales		45
Professional Services		335
Computer Operations		
	Technical	54
	Computers	40
	Scheduling/Control	40
	Data Preparation	100
	Contract Operators	170
		804
	Say	800

The most interesting features of this organisation are the large data preparation and contract computer operations services.

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HARDWARE

- Processor 1

370/158	x 3 Mb
Disks:	14 x 100 Mb EDS (3320 Type 8 x 317 Mb FDS (3350 Type)
Tapes:	10 x 9 track 1600/6250 BPI; 2 x 7 Track
Printers:	4 x 1100 1 pm (1430/s)
Data Comm:	Memorex 1270 - Concentrater

- Processor 2

370/155	x 768 Kb
Disks:	16 x 100 Mb EDS (3330 Type)
Tapes:	2 x 1600/6250 BPI; 9 Track
Printers:	1 x 1100 1 pm (1403)
Data Comm:	Memorex 1270 - Concentrator

- Processor 3

370/145	x 1 Mb
Disks:	16 x 100 Mb EDS (3330 Type)
Tapes:	10 x 1600/6250 BPI; 9 Track
Printers:	2 x 1100 1 pm (1403's)
Data Comm:	Memorex 1270 - Concentrator

- Processor 4

PDP 10	(1024 K Words)
Disks:	4 x 200 Mb EDS 3330 Type
Tapes	2 x 1600/6250 BPI; 9 Track
Printers:	1 x 900 1 pm
Data Comm:	Tymshare/Varian V73 hardware

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- The IBM 370/145 uses DOS/VS. The 370/155 uses APL/DVS R 25 and the 370/158 is being upgraded to VS 2 R1.7. The PDP10 is being commissioned now for time sharing use.

- The tapes and fixed disks are from STC; the exchangeable disks are from Memorex.

NETWORK & TERMINALS

- SLIGOS believes that the association with Tymshare and Sharp Associates means a network configuration of very superior performance.

- The software monitor used for real-time is SHADOW (from ALTERGO in London) and they also support TSO from IBM and APL. They do not use IMS for database work. The Shadow monitor is used mainly to support a special application for Renault.

- The network is supporting about 140 terminals for transaction processing and just under 30 for RJE use. The terminals used are from the well known vendors. Anderson Jacobson are most popular for transaction processing and the IBM 3741 is used mostly on the RJE network.

- Professional services account for 30% of SLIGOS' revenue.

a) Consultancy Services

Issued from Cego's original specialty, Consultancy services are oriented towards data processing systems. They offer project work:

- Management planning
- Implementation methods
- Audit

b) Development activities

- Basic software
- Minicomputers, "turnkey" systems

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- Micronics, a pocket-size terminal, connected to an ordinary telepnone for data acquisition. It can receive informations from the central computer (Display of 15 characters).

- Computing Services

  - Remote Batch
  - Interactive Timesharing

- The major on-line services are to Renault who have a real-time application via the SHADOW software which involves nearly 30 vdu terminals (CIT TRANSAC - IBM 3270 compatible). Also supported are 8 ADDS vdu's in Carte Bleue who have an on-line enquiry system in operaton.

- The principal time sharing service is APL, but the PDP 10 will take over this task when commissioned.

- Two file handling packages are SLIGOS proprietary services. COMPTEL 1 is for conventional file handling and COMPTEL 2 is their own database management system. They believe it gives better operational control and security than IMS.

- The main payroll package for large companies is PAGOS and there is also INFO 2000 for small payrolls. They have several packages for general accounting and a proprietary on-line order processing package. There is no specific package for financial modelling.

- The most unusual sevices are the large data preparation and contract computer operating services in which more than 250 personnel are involved. SLIGOS are developing strongly in professional services (consultancy and turnkey minicomputer systems) and they have some 70 staff engaged in contract programming.

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SERVICE AVAILABILITY

Services are Monday to Sunday inclusive, 19 hours a day public holidays excepted.

MARKETING

- Sligos is almost a total service company with prime markets in commercial computer bureau services, timesharing, contract programming, data preparation and computer operations. It does not have a scientific orientation.

- The hardware base is good and the PDP 10 will improve the quality of time sharing services considerably for SLIGOS.

- SLIGOS has the strength of personnel to be in the big league. It has a small Brussels office in Belgium.

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SUBSIDIARIES AND AFFILIATES

- Agency:
  Vineuil 41350 Tel: 78-98-37

- French Subsidiaries:
  - IN - rue Diderot - BP 333 - 62005 ARRAS - Tel: 21-61-53
  - AXYS - 1 rue Gay Lussac 25000 BESANCON - Tel: 80-77-11
  - AXYS - 13 rue Albert ler - Tour Mercure - 2100 DIJON - Tel: 45-59-22
  - AXYS - 22 rue Camill Roy 69007 LYON - Tel: 72-72-30
  - SATI - La Giraudiere 37170 CHAMBRAY LES TOURS Tel: 28-07-97
  - CENTRINFORMATIQUE - BP18 63430 PONT DU CHATEAU - Tel: 83-21-6
  - SLIGOS-CPP - 91 rue jean-Jaures 92807 PUTEAUX Tel: 776-42-42
  - APEX - INFORMATIQUE
  - SLIGOS RONE-ALPES - 25, rue Frederic Chopin 26000 VALENCE - Tel: 42-03-11

- SLIGOS BENELUX
- SLIGOS GMBH

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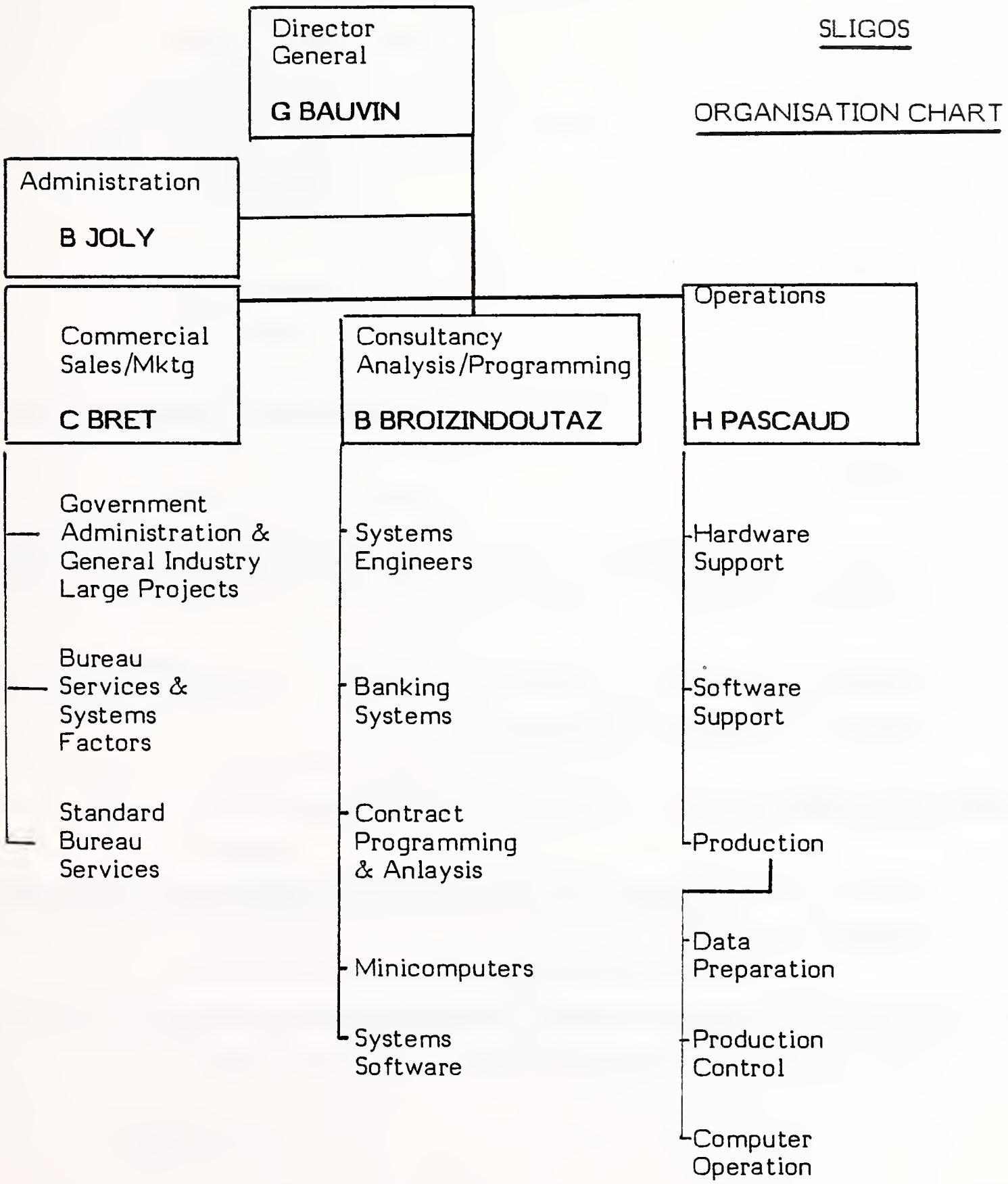
SLIGOS

ORGANISATION CHART



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COMPANY PROFILE

TYMSHARE UK
(TYMCOM LTD)
Kew Bridge House
Kew Bridge Road
Brentford
Middx TW8 0EJ

Tel: (01) 568 4277

Peter Jones
Managing Director
Total Turnover (1978: 1.3M)
Total Staff: 40

THE COMPANY

- Tymshare UK was formed in 1973 - 30% owned by Unilever and 70% by Tymshare Inc. (USA).

- Associate Companies in Europe are CEGOS - Tymshare in France and Taylorix - Tymshare in West Germany.

TURNOVER AND STAFF

- There are around 40 staff in the U.K. with North London branch due to open on December 1st, 1978.

- Turnover in 1977 was £800.000. The projected revenue forecast for 1978 was £1.2 - £1.3 million which was achieved.

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SYSTEMS HARDWARE

- Tymshare UK has access to:

  - 6 IBM 370's (others being installed)
  - 9 x DEC 10's
  - 22 x XDS 940's

  all Cupertino and Palo Alto (California), Valley Forge (Pennsylvania) and Houston (Texas).

KEY PRODUCTS AND SERVICES

Tymshare offer three main services:

- TYMCOM 370

System:

- IBM 370/158 - fully IBM compatible
- Very powerful, large-scale computer - approximately equivalent to 6 x 360/50's
- Large program size (up to 1 mb is standard)
- Inexpensive, virtually unlimited disc storage
- Dedicated devices allowed, such as disc, magnetic tapes, card reader/-punch, line printer

Environment:

- Conversational Monitor System (CMS)
- Precautionary daily back-up

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Software Products:

- Languages:

  OS FORTRAN IV - Code & GO, GI, H, H extended
  FORTRAN interactive Debug
  OS COBOL - Full ANS Version 4
  OS PL/1 - Optimizing Compiler
  ASSEMBLER - F level and Waterloo G level
  BASIC - Call 360 version 1.2
  EDIT - source program editing
  Libraries

Applications Software:

EXPRESS - information Analysis and Reporting
GPSS - Discrete Event Simulation
Data Management Package - System 2000
Statistical Packages - Bio-Med Subroutines
FOCUS - General Purpose Data Base Management System

- TYMCOM 10

System:

- DEC System KL10 - Tymshare enhanced
- Medium to large scale computer designed exclusively for time-sharing. Approximately equivalent to 360/65
- Program size up to 50k works of 250K Bytes standard - larger on request. Overlays permitted.
- Good computational thru-put

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Environment:

- TYMEX - Tymshare interactive executive
- Precautionary daily back-up
- Deferred Processing for reduced cost

Software Products:

- Languages:

FORTRAN IV H Level - Tymshare enhanced
FORTRAN interactive debug - FDEBUG
COBOL ANSI standard version 4
COBOL interactive debug - CDEBUG
COBOL Skeleton builder - COBAID
XBASIC - Tymshare enhanced standard
EDITOR - Tymshare developed text editor
DEC standard products - MACRO, TECO, ALGOL and DEG executive Libraries.

Applications Software:

BBL Basic Business Language
Operations Research
STATPAK - Statistical Analysis
MAXIMA - Linear Programming

Data Base Management:

X22 - General purpose package
MANMAN - Inventory Control and Bill of Materials Processor
CRAM - Critical Resources Scheduling Package
MAGNUM - General purpose DBMS
MAGNUM OPUS - Production Planning System

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Financial

Leveraged Leasing
COPAQUEN - depreciation, investment analysis
TYMQUOTE - financial data base

Engineering:

SPICE - circuit analysis
COMPACT - Microwave Circuit Analysis and Optimisation
CSMP - Analog Computer Simulation
MACE - Structural Vibration Analysis
MIMIC - mini computer simulators
INTEL - Micro Computer Simulators
NSC - Micro Computer Simulators

Utility:

Paper Tape Conversion
Plotting
Miscellaneous

- TYMCOM 9

System:

- XDS 940 - Tymshare modified and enhanced
- Medium scale computer used exclusively for interactive time-sharing. Approximately equivalent to a 360/40
- Maximum program size is 16K words or 48 K bytes. Overlays permitted.

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Environment:

- EXECUTIVE - Tymshare interactive executive
- Easy to use - fully conversational
- Powerful and flexible Applications software.

Software Products:

- Languages:

  SUPERBASIC - Tymshare conversational BASIC
  SUPERFORTRAN - Tymshare conversational FORTRAN
  BFORTRAN - Tymshare compile and executive FORTRAN
  EDITOR - Tymshare text editor

Applications Software:

Data Management & Reporting
RETRIEVE - easy to use
IML - system builder

Financial Modelling Analysis, and Reporting:

TYMTAB - modelling and reporting
FINPAK - loan depreciation, investment analysis
PORTMGT - Portfolio Management Package
CASHMGMT - Cash management package

Market Research and Analysis:

STATPAK - statistical analysis
SURVEY - questionnaire analysis and cross tabulation

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Project Management:

C3CPM - Critical Path Analysis
Construction series by COMARC

Electrical Engineering:

Network Analysis - CODED, TYMTRAC, TRAP
Digital Analysis - LOGSIM
Microwave Analysis - MICAP
Simulation - CSMP, LAPLACE

Utility:

Plotting - EASYPLOT plotting language
Paper-Tape conversion
Numerical Machine Tool

- Each of the above packages is supplemented and complemented by other packages and each of the packages can do what the other can do with some inconvenience and additional cost.

- TYMET

  This was developed as a response to user needs in the U.S.A. and is gradually being extended to cover many parts of the world. Its basic concept was to provide an easy-to-maintain and extendable communication facility, independent of the mainframe system it was linked to or the terminals that were used to access these systems. This has been achieved and Tymnet is probably one of the first international commercial networks to be described as 'distributed' as opposed to 'star' network.

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- Features included in the Tymnet network are:

  - intelligent multiplexers for message switching computers (Varion 620's - now taken over by Univac)
  - full duplex operation
  - multiple speed device - handling capability
  - alternate routing of data
  - use of equipment from various sources (not restricted to one manufacturer)
  - sophisticated error-detection/retransmission procedures
  - ASCII and EBCDIC code handling
  - terminal recognition capabilities.

- To sum up, what Tymshare can offer its customers is:

  - Interactive time-sharing at up to 30 cps on IBM 370/158, PDP 10 and XDS-940 computers
  - High-speed remote terminal access at up to 2000 baud on PDP-10-and 370/158 computers
  - Wide selection of interactive terminals
  - Contract programming and consulting
  - Network services
  - Facilities management
  - Bibliographic Data Bases
  - Computer Maintenance

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COMPANY PROFILE

CEGI-TYMSHARE
106, Bureaux de la Colline
de Saint-Cloud
92213 Saint-Cloud (Paris)

Tel: 602-24-00

Jacques Blouet
Chief Executive
Total 1978 Sales: $7.6M
(Sales 1977: $5.9M)

THE COMPANY

- Formerly Cegos-Tymshare, Cegi-Tymshare was created at the beginning of 1970 by Tymshare Inc., Cegos and Credit Lyonnais under the management of Gerard Bauvin. Later, Cegos-Tymshare acquired the representation of Tymshare in France, Belgium, The Netherlands, Switzerland, Spain and Italy.

- The French operations began with a Xerox XpS 940 and Tymshare software. In 1972 a trans-atlantic line was hired that provided access to the Tymshare XDS and PDP 10 computers of the US parent.

- The original shares were distributed 51% to Cegos, 29% to Credit Lyonnais and 20% to Tymshare. Of the first people to join the company, the central figures of Mr Gerard Bauvin and Mr Jacques Blouet are still present.

- In 1972, negotiations were held with CTS in Belgium, an affiliate of the Societe Generale de Belgique and CTS became part of GTS (G.E.) one year later.

- Cegos-Tymshare was initially very active and successful in the Paris region and decided to follow Sligos in mid 1973, in expanding to Belgium. By 1974, the Belgian operation had proved to be very successful and coincided with the first profitable year for Cegos-Tymshare in France.

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- Plans were made at the end of 1974 to expand to the Netherlands. Also at the end of 1974, Cegos-Tymshare decided after an agreement with Shell to install a network node in the Hague to enable Shell to access their Houston computer through Tymnet. At that same time, an affiliated company was created in the Netherlands.

- In July 1976, Credit Lyonnais obtained 51%, Tymshare 45% and Cegos 4%. The decision was taken to change the name of the company and in June 1977 the new name of Cegi-Tymshare signified the continuation of the well-known service.

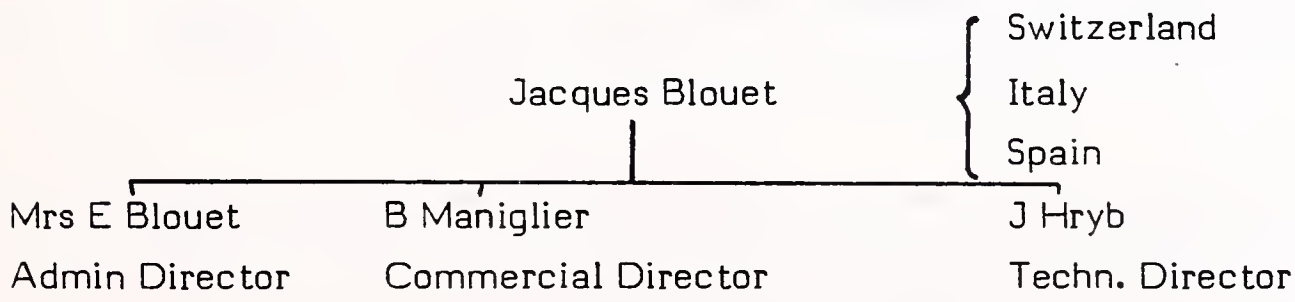
- At the end of a successful 1976 in France and good results in Belgium, a marketing reorganisation took place. Both country organisations, till now independent, were integrated under the French commercial management.

ORGANISATION

Legal organisation

Cegi-Tymshare	Gerard Bauvin, President Jacques Blouet, Associate General Manager
Cegos-Tymshare Europe	Jacques Blouet, President
Belgian Branch	R. Trehin, Director
Dutch Affiliate	R. Trehin, Director

Structural organisation



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Area 1	Area 2	Area 3	Marketing
Paris districts		Belgium B Gougel Manager	
		Netherlands R Dumas Manager	

- The organisation is intended to integrate the European activities with the head office. To ensure good co-ordination, all the foreign district managers are people from the French head office.

- Each district has a district manager, its own salesmen and application consultants. The application consultants are fully in charge of their customers.

- The marketing department co-ordinates the European marketing interest of Tymshare Inc., and the European offices controlled by CEGI-TYMSHARE. They also study new products, prices and are in charge of promotion.

HARDWARE

- Local hardware is XDS 940, 64K. Through Tymnet, access is possible to 26 other XDS, 10 PDP 10s, and 5 IBM 370/158s of Tymshare. A 3033 is ordered for delivery in late 1978.

- Service is provided on each computer during a 20-24 hour day. Tymnet nodes are Varians with Data 100 terminals.

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PRODUCTS AND SERVICES

- The different Timesharing systems available are called:

  - TYMCOM IX for the XDS 940
  - TYMCOM X for the PDP 10
  - TYMCOM 370 for the IBM 370

  Interactive Timesharing and deferred processing are processed on the different systems.

- The main applications packages offered are US products:

  - Express (owner MDS)
  - Focus (owner Information Builders)
  - Magnum (owner Tymshare)
  - BBL (owner Core and Code)

  Some specific financial data banks are accessible for the French market. A growing activity is providing international access to multinational customers.

- Express is an information analysis oriented DBMS, using simple English commands for general analysis, forecasting, statistical analysis, exception reports, formal reporting, plotting. This product has been very successful in market research and panel applications.

- Focus is a high level information management system with a query language that offers extensive capabilities for working with large data bases.

- Magnum is the first development of a DBMS utilizing the relational concept. It is suited to complex administrative applications.

- Cegi-Tymshare also offers to their customers the possibility to rent terminals on a one-month basis, where the terminal manufacturers normally only sell their equipment or rent it on an annual basis.

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- Other services are programming and analysis and comuter time sales on the Tymshare computers.

MARKET STRATEGY

- Cegi-Tymshare's strategy is to become the European leader in "value added" timesharing, operating as consultants for solutions by computer products in high level management problems in the main industrial and public organisations. An important part of the strategy is the international network, and a special motivation plan for Tymshare personnel all over the world helps in creating international customers.

Revenue

	1977	1978
Computer Time	$5.5M	$6.96M
Other	$0.4M	$0.64M
Total	$5.9M	$7.60M

Split of computer time: 40% Tymcom IX, 25% Tymcom X, 35% Tymcom 370.

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COMPANY PROFILE

UNIVERSITY COMPUTING COMPANY
London Centre
344-350 Euston Road
London NW1 3BJ

Tel: (01) 387 9661

John Kason
PRESIDENT of UCC International Group
Total 1976 Sales: $ 7.3M / UK
$11.5M / EUROPE
Total 1977 Sales: $ 7.7M / UK/
$12.9M/EUROPE
Total Staff: 265 UK/460 EUROPE
Owned by Wyley Corporation

THE COMPANY

- UCC initially entered Europe through the acquisition in 1967 of Computer Services (Birmingham) Ltd; subsequently University Computing Company (Great Britain) Ltd was set up. The original network consisted of service centres in Birmingham and London with a 1004 terminal in The Hague.

- There then followed a number of acquisitions which both increased the size of UCC's business in Europe and the diversity of their activities. Chronologically these were:

Date	Acquired Company	Comment
1969	Automation Centre International	Swiss based bureau giving additional coverage in Belgium, West Germany, Austria and Switzerland.
1972	Computer Instrumentation Ltd	Manufacturing facility associated with UCC since 1970.

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1974	Wates Computer Services Ltd	1106 based bureau which contributed EXEC 8 facilities.
1976	Riomhaire Teoranta	A further 1106/EXEC 8 based bureau in Galway, Ireland; renamed University Computing Company (Datacom) Ltd.
1978	Electronic Calculus Ltd	A small team of structural engineers involved with North Sea Oil platforms; purpose of acquisition was to make a stronger bid for the structures market.
1978	Treudata	Primarily Batch bureau in Krefeld, West Germany; subsequently re-named AC Service GmbH.

- The closure of UCC's office in Shannon (Eire) in September 1978 was due to disruption to its leased and dial up lines caused by industrial action taken by the Irish Posts and Telegraph Department over the past two years. Work has been transferred mainly to the centre at Galway.

- In 1974, UCC formed its Software Products International Division in Europe to market proprietary system software packages.

ORGANISATION

- Outside of the U.S., services are the responsibility of the UCC International Group headed by John Kason, President.

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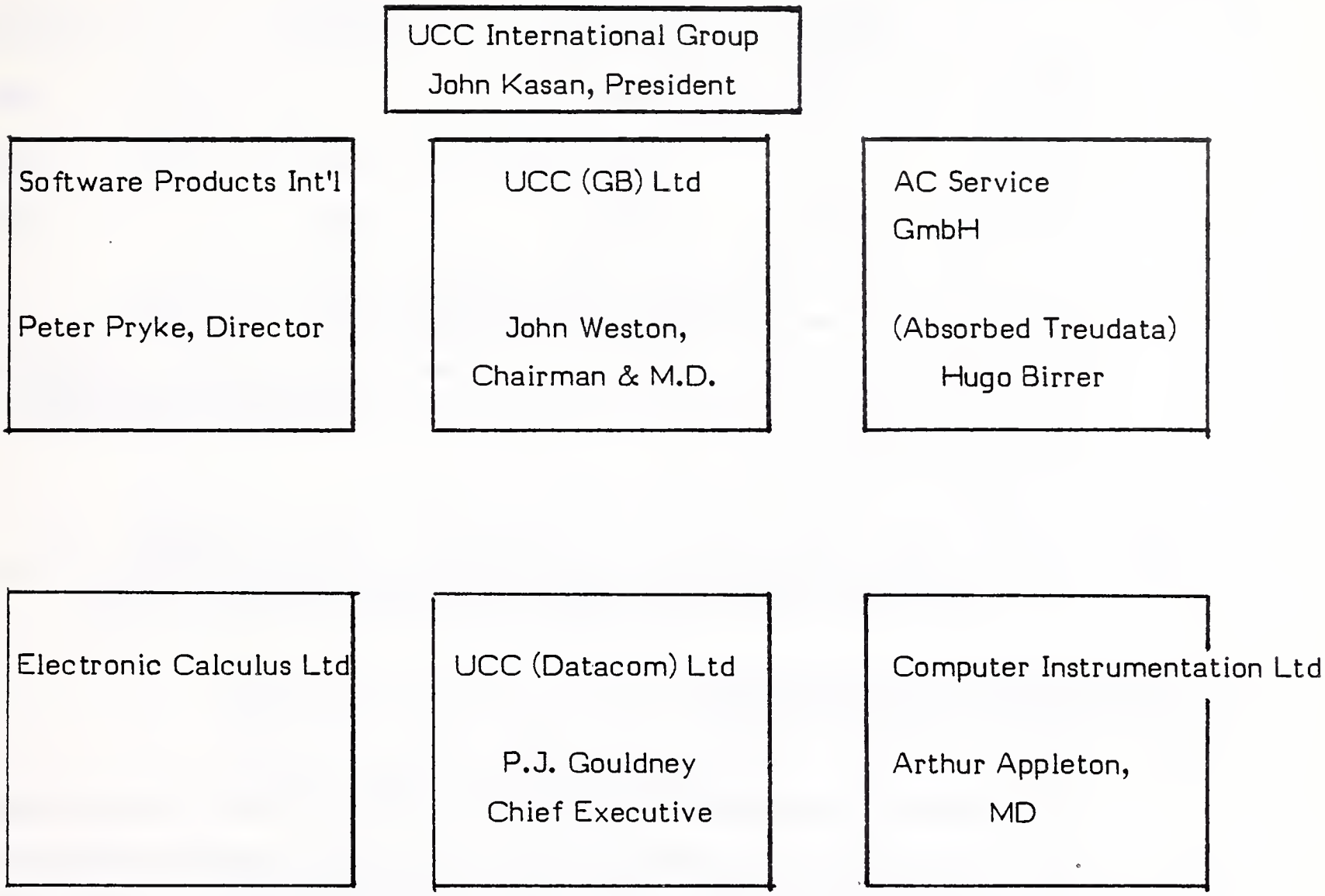

STAFF AND SALES GROWTH

- The European operations of the UCC owned group of companies has in total shown consistent growth and modest profits in recent years:

	Total Revenue	Profit	Bureau Revenue
1976	$ 11.5M	$ 2.9M	$ 9.7M
1977	$ 12.9M	$ 2.2M	$ 10.6M
1977*	$ 13.3M	$ 2.3M	$ 10.9M

- When considering these figures, allowance should be made for the fall in the value of the dollar which means that the performance of the Group and of the UK Company was in domestic accounting terms appreciably better than the quoted results would indicate. Thus for comparison the 1977 figures are also (indicated by *) shown using the 1976 exchange rate. The 1976 figures have been adjusted to exclude $800,000 of Software products revenue which is now taken directly into the US Company's results

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	STAFF	REVENUE	PROFIT	SALES/EMP
1975	236	$6.7M	-	28.4
1976	251	$7.3M	$0.7M	29.1
1977	265	$7.7M	$1.0M	29.1

Sales per employee have been gradually levelling off at around $29 thousand, - this figure is, however, adversely affected by the inclusion of hardware maintenance staff not normally included in the permanent staff numbers of other RCS companies.

- AC Service is predominantly a Batch Bureau, but added $3.8M of Remote Batch services (out of an estimated $9.9M total business sales in 1977).

KEY PRODUCTS AND SERVICES

- UCC has rapidly identified the potential of on-site computer hardware linked to a computer services network and has introduced Services-3, a total service combining VENTEK minicomputers linked to the European Computer Utility Network.

- UCC coined the computer utility concept (or computing resource), providing processing power to the user community like electricity through a network of lines. Access to these utility centres occurs in the two classical ways: batch over the counter or remote computing (both remote batch through COPE front ends or interactive through FASBAC front ends). The latter are DEC PDP 8s and 9s.

- Commercial accounting and management science/control services include the standard sales and purchase ledgers, payroll and sales analysis/stock control system plus a mailing system (MAIL-PLAN-3) credit card system on the one hand and more specialised services such as financial modeling/budgeting, optimisation of depot, location, market research analysis, typesetting, newspaper accounting, reinsurance accounting, and subscriptions and covenants.

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- The real strength of UCC is in engineering and scientific services, including mathematical/statistical services, operational research, a suite of programs for power transmission analysis, oil rig production platform design, numerical control, CAD with graphics, pipe stressing and a wide variety of civil and structural engineering programs.

- A recent success has been TERADYNE's P400 circuit board failure analysis, and the D-LASAR package for logic validation.

SYSTEMS HARDWARE

- There are four major processing centres located in Galway, in the Irish Republic, London, Birmingham and Norbury in the UK. All other service centres tie into these, either directly or via a concentrator.

  - Galway has a Univac 1106 running under Exec 8 and serves the Service Centres of Cork, Galway and Dublin, (via which Galway ties into London). Mainly for Batch and RJE.

  - Birmingham has a Univac 1108 under UCC Exec, with a front-end for interactive/RB processing. Serves Manchester and Glasgow in addition to Birmingham.

  - Norbury has a Univac 1108 under UCC Exec, with switched network links to Glasgow, Manchester and Birmingham. Norbury serves the local and London service centres. Mainly Batch and RJE.

  - London has dual Univac 1108's with 21B characters of on-line storage. Front-ends provide for remote computing services. This centre is the model support for Paris, Frankfurt, and the Hague, (Antwerp office now closed) and back-up for Galway through Dublin.

- Terminals can be ASCII or EBCDIC compatible for interactive service (10-30cps) and Harris, Incoterm, Data 100, ICL or Singer, Ventek, DEC, Univac 1004 and MDS for remote batch.

- Compilers include FORTRAN IV, ALGOL, COBOL (ASCII & ANSI), BASIC, PL/1 and APT.

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PRODUCT MARKETING

- UCC has recently signed an agreement with Gemini Computer Systems Ltd enabling them to offer System 2000 through the Exec 8 service (the DBMS from MRI). This will be a major product for UCC, replacing Univac's DMS 1100.

- As already mentioned, the total service (Service-3) will use minis as small end-users front-ends for periodic peak processing off-loading onto the network. UCC will provide the installation support and programming necessary.

MARKETING STRATEGY

- The aim is to run each UCC service centre as a profit centre. Commercial Applications Division has suffered from migration of UCC's larger standard applications users to their own systems and the growth of the market for mini-computers. Consequently UCC is now concentrating on the development of highly specialised applications for their clients and the number of these which have special requirements is increasing. Particular examples of success in UCC's tailor made approach are to be found in mailing applications and specialised accounting.

- The Technical Applications Division continues to be product oriented and the division benefited from the acquisition of ECL's specialist staff and their structural design programs.

- The Technical Application Division is subdivided according to application area, each of which has specific business targets to meet.

- UCC has gradually progressed to the point of offering distributed data entry, and 75% of their clients have RJE terminals in their offices.

- Interactive sevices represent 10% of UCC's business. Manufacturing is growing in importance and will shortly account for one-third of the total business. Batch revenues continue to progress and represent some 20% of the total.

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- Remote Batch services are the largest market for UCC and a strong growth area, given the future importance of Service-3.

- Commercial accounting and management science/control services include the standard sales and purchase ledgers, payroll and sales analysis/stock control system plus a mailing system (MAIL-PLAN-3) credit card system on the one hand and more specialised services such as financial modeling/budgeting, optimisation of depot, location, market research analysis, typesetting, newspaper accounting, reinsurance accounting, and subscriptions and covenants.

- The real strength of UCC is in engineering and scientific services, including mathematical/statistical services, operational research, a suite of programs for power transmission analysis, oil rig production platform design, numerical control, CAD with graphics, pipe stressing and a wide variety of civil and structural engineering programs.

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WHAT UCC LOOKS LIKE IN EUROPE

Computer Utility Network

UCC (Great Britain) Limited
Birmingham
Glasgow
London
Manchester
Norbury

UCC (Datacom) Limited
Dublin
Galway

UCC (Nederland) NV
The Hague

UCC (France)SA
Paris

UCC Utility Services Benelux
Antwerp

AC-Service GmbH
Frankfurt

IBM-based software

UCC (Great Britain) Limited
Software products division
Norbury

Manufacturing

Computer Instrumentation Limited
Eastleigh (Southampton)

European Bureau Service

AC Service GmbH
Brussels
Dusseldorf
Frankfurt
Hamburg
Munich
Stuttgart
Vienna
Zurich

COMPANY PROFILE

AC SERVICE GmbH
Peschelanger 3
Postfach 833107
8000 Munich 83

PETER MANNER
Managing Director
Group Turnover: DM 21.3M
Turnover (branch): DM 4M
Total Staff (branch): 40

THE COMPANY

- The development of AC began in 1959 from the in-house DP department of AMAG GmbH with the establishment of the Automation Center AG in Wettingen near Zurich, which started out by providing a then new EDP service, that of centralised external computing.

- The German associate company was formed in 1963 in Munich.

- The AC group of companies is organised as follows:

  . HOLDING COMPANY
  ACI Automation Center International
  AG, Wettingen, Zurich

  . SUBSIDIARIES (100% owned)

HEAD OFFICE: AC Automation Center AG, Wettingen

AC Service GmbH, Germany
- Munich
- Stuttgart
- Hamburg
- Dusseldorf
- Offenbach am Main
- Brussels

AC Service GmbH
- Vienna
- Salzburg
- Wels

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- SISTER COMPANY
  UNIVERSITY COMPUTING COMPANY (GB) LTD (associated in 1969, UCC in Dallas, USA)
  - London
  - Birmingham
  - Manchester
  - Dublin
  - Shannon
  - Paris
  - The Hague

Each centre is autonomous yet all co-operate within the group structure.

- Today, the AC group includes eight complete bureaux with a staff of 500, 150 of which are programmers and analysts. (Bureaux located in Munich, Stuttgart, Frankfurt, Dusseldorf, Hamburg, Vienna, Brussels and Wettingen (Zurich)).

- AC is predominantly a batch bureaux and its 1977 revenue was $3.8M for batch services alone.

- AC's staff are highly specialised and have had considerable experience with the company. About 20 (from a total of 40) have been with AC for over five years and seven for over 10 years. One third of the staff are involved in programming.

- Clients range across the business spectrum and from small to very large users; these include:

  Rent-a-car firms
  Small credit houses
  Insurance companies
  Travel agencies
  Airport administration
  Publishing houses
  Banks.

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INTERNAL ORGANISATION

Managing Director

- Consultancy Sales
- Administration Secretarial

Systems Development

- Analysis Organisation
- Programming
- Client Support
- Systems programming

Production

- INPUT/OUTPUT Control
- Work Preparation
- Data Capture
- Data Processing
- Form Preparation
- Despatch

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SYSTEMS HARDWARE

2	x	IBM 370/145	512 - 1024 K
2	x	IBM 370/135	192 - 384 K
1	x	SIEMENS 7.750	512 K
2	x	SIEMENS 7.730	192 - 256 K
1	x	SIEMENS 4004/135	256 K
2	x	HONEYWELL GE 435	16 - 32 K
3	x	HONEYWELL GE 415	16 - 32 K
1	x	IBM 1410	40 K
5	x	IBM 1401	16 K
2	x	Link with UNIVAC 1108-Duplex in London via cope.45-Terminals	

KEY PRODUCTS AND SERVICES

STANDARD SYSTEMS

AC products are standardised programs and systems developed by AC and suitable for any user in the commercial field. The systems are:

- Accounting
- Payroll/Personnel
- Invoicing
- Stock Control
- Statistics
- Financial Analysis

- PASAC - a flexible batch service for a payroll accounting package for retail businesses, service companies, administration and production areas.

- LODUS 1 - a payroll and personnel package

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- FIBAC - an integrated modular program financial accounting system for invoicing, stock control, payroll and personnel, cost control, credit/debit accounting, general accounting and sales applications.

- FIDUS 1 - this financial accounting package serves mainly the industry and retail business for financial analysis, VAT accounting, stock and order control, and statistics.

- MADUS 1 - a system developed for materials requirements in the areas of inventory and materials stock and order control and error monitoring.

- STADUS 1 - a statistics system for sales monitoring : per sales branch statistics per article number per article groups for determining favorite articles per client number and turnover per month/year for invoicing control.

BRANCH SPECIFIC SYSTEMS

AC has developed user-oriented software products for:

- o Wholesalers/Distributors of electronic econstruction equipment;
- o Publishing Houses/Printers: warehusing; invoicing system; subscriptions and addressing systems; statistics;
- o Travel Agencies : booking systems;
- o Real Estate : lettings and rentals;
- o Banks : data bank inquiry system for 200 banks;

- All of AC's services and products are backed up by a complete project management service starting with problem analysis, EDP planning and organisation, programming, processing data control and strict security, through to client support.

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AC Bureaux in Germany

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Telex: 8587843

FRANKFURT
AC-Service GmbH
Datenverarbeitung
Strahlenbergerstrasse 105 - 107
D-6050 Offenbach am Main
Telefon: (0611) 88 60 81
Telex: 4152894

HAMBURG
AC-SERVICE GmbH
Datenverarbeitung
Kleine Bahnstrasse 10
D-2000 Hamburg 54
Telefon: (040) 850 60 16
Telex: 214729

MUNCHEN
AC-SERVICE GmbH
Datenverarbeitung
Peschelanger 3
D-8000 Munchen 83
Telefon: (089) 67 40 01
Telex: 524418

STUTTGART
AC-Service GmbH
Datenverarbeitung
Ruppmannstrasse 43
Postfach 80 01 80
D-7000 Stuttgart 80 / Vaihingen
Telefon: 0711 / 73 20 81
Telex: 7255606

Associates: other AC bureaux in Wettingen/Zurich, Vienna, Brussels, Paris, The Hague, London, Birmingham, Manchester, Dublin, Shannon.

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APPENDICES

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APPENDIX A: DEFINITIONS

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APPENDIX A DEFINITIONS

COMPUTER SERVICES

These are services provided by vendors that perform data processing using vendor computers or assist users to perform such functions on their own computers.

The following are the definitions of the modes of service used in this report:

REMOTE COMPUTING SERVICES (RCS)

- Provision of data processing to a user by means of terminals at the user's site(s) connected by a data connumications network to the vendor's central computer. The four sub-modes of RCS are:

  - INTERACTIVE (Time-sharing) is characterized by interaction of the user with the system, primarily for problem solving time-sharing, but also for data entry and transaction processing - the user is on-line to the program/files.

  - REMOTE BATCH is where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements. Data transmission in both directions occurs using a data transmission line.

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- USER SITE HARDWARE SERVICES is a remote computing service (usually on a mini computer) provided by and connected to a computer service company installation. The mini computer enables the user to do processing against small files locally whilst resorting to the link with the computer service company installation for heavy processing power, manipulation of mass files and use of high speed output services.

- DATA BASE is characterized by the retrieval of information from a vendor-maintained data base - this may be owned by the vendor or a third party.

BATCH SERVICES

- This includes data processing performed at vendor's sites of user programs and/or data that are physically transported (as opposed to electronically by telecommunications media) to and/or from those sites. Data entry and data output services, such as keypunching and COM processing, are also included. Batch services include those expenditures by users that take their data to a vendor site that has a terminal connected to a remote computer used for the actual processing.

FACILITIES MANAGEMENT (also referred to as "Resource Management" or "Systems Management").

- The management of all or part of a user's data processing functions under long-term contract (not less than one year). To qualify as FM, the contractor must directly plan and control, as well as operate, the facility provided to the user on-site, through communications lines, or in mixed mode. Simply providing resources, even though under a long-term contract, and/or for all of a user's processing needs does not necessarily qualify as FM.

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PROFESSIONAL SERVICES

- Management consulting related to EDP, systems consulting, systems design and programming, and other professional services are included in this category. Services can be provided on a basis of: "Time and Materials", whereby the user pays for the time used of an individual on a daily or other fixed rate, or "Fixed Price", where the user pays a fixed fee for a specific task or series of tasks.

- TURNKEY SYSTEMS are composed of hardware and software integrated into a total system designed to fulfill completely the processing requirements of a single application.

SOFTWARE PRODUCTS

- This category is for user's purchases of systems and applications packages for use on in-house computer systems. The figures quoted include lease and purchase expenditures, as well as fees for work performed by the vendor to implement and maintain the package at the users' sites. Fees for work performed by organizations other than the package vendor are counted in professional services. The two-categories are:

  - SYSTEMS PACKAGES are operating systems, utilities, and language routines that enable the computer/communications system to perform basic functions. This software is provided by the mainframe manufacturers with their hardware; other vendors provide improved versions of this and special-purpose routines. This classification includes compilers, data base management software, communications packages, simulators, performance measurement software, diagnostic software, and sorts.

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- APPLICATIONS PACKAGES are software that perform processing to serve user functions: They consist of general purpose packages, such as for accounting and inventory controls, and special purpose packages, such as personal trust, airline scheduling, and demand deposit accounting.

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APPENDIX B: CONVERSION RATES USED IN THIS REPORT

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DOLLAR EXCHANGE RATES USED IN THIS REPORT

ONE DOLLAR EQUALS:

COUNTRY	RATE	UNIT
FRANCE	4.31	FRANCS
FEDERAL REPUBLIC OF GERMANY	2.0	DEUTSCHMARKS
UNITED KINGDOM	0.5	POUND STERLING
ITALY	824	LIRE
SWEDEN	4.36	KRONER
NORWAY	5.11	KRONER
DENMARK	5.25	KRONER
HOLLAND	2.03	GUILDERS
BELGIUM/LUXEMBOURG	30.35	FRANCS
AUSTRIA	13.74	SCHILLINGS
SWITZERLAND	1.71	FRANCS
SPAIN	67.38	PESETAS
PORTUGAL	45.91	ESCUDOS
FINLAND	4.00	MARKKAS
GREECE	35.00	DRACHMAE

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